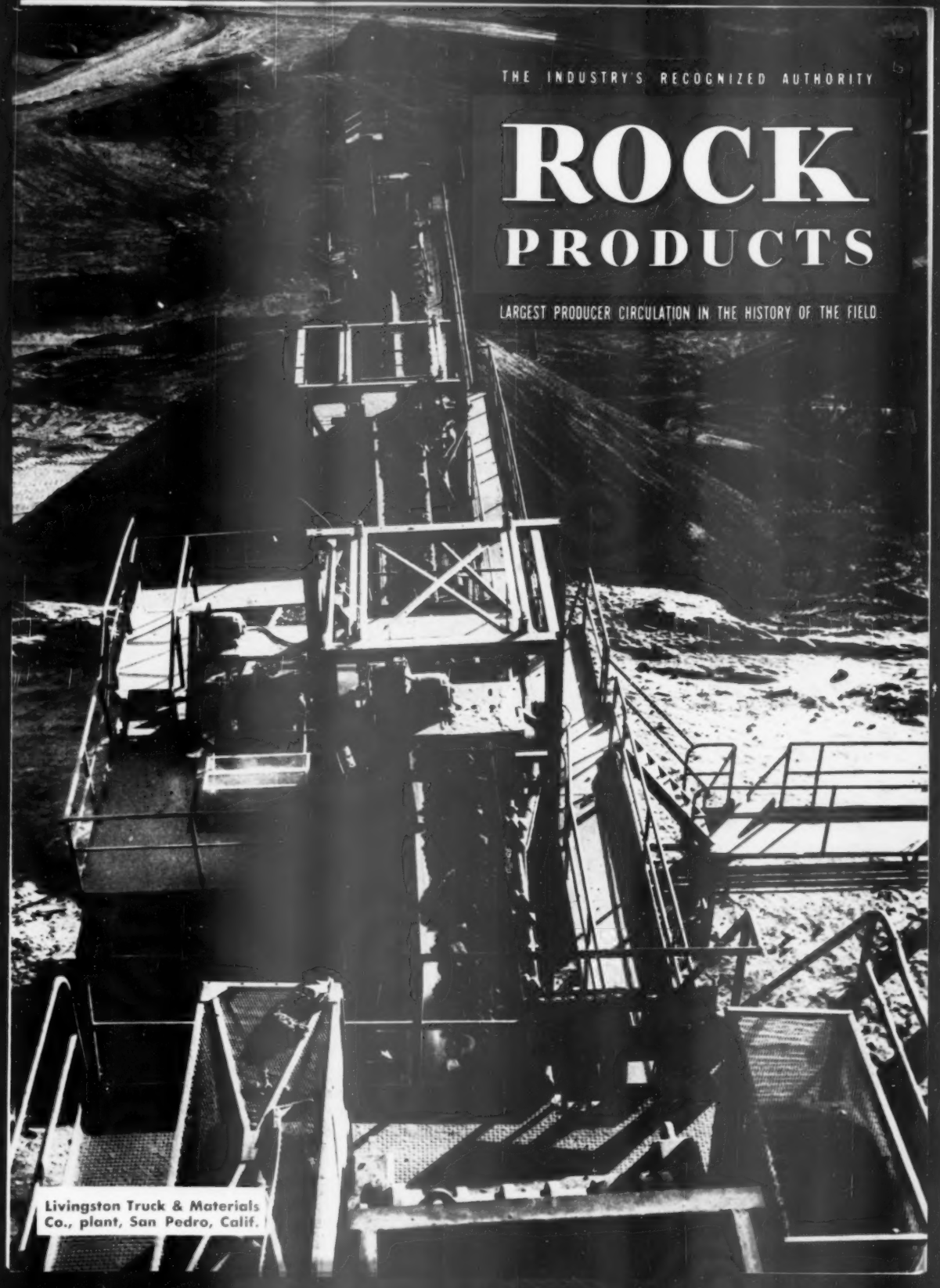


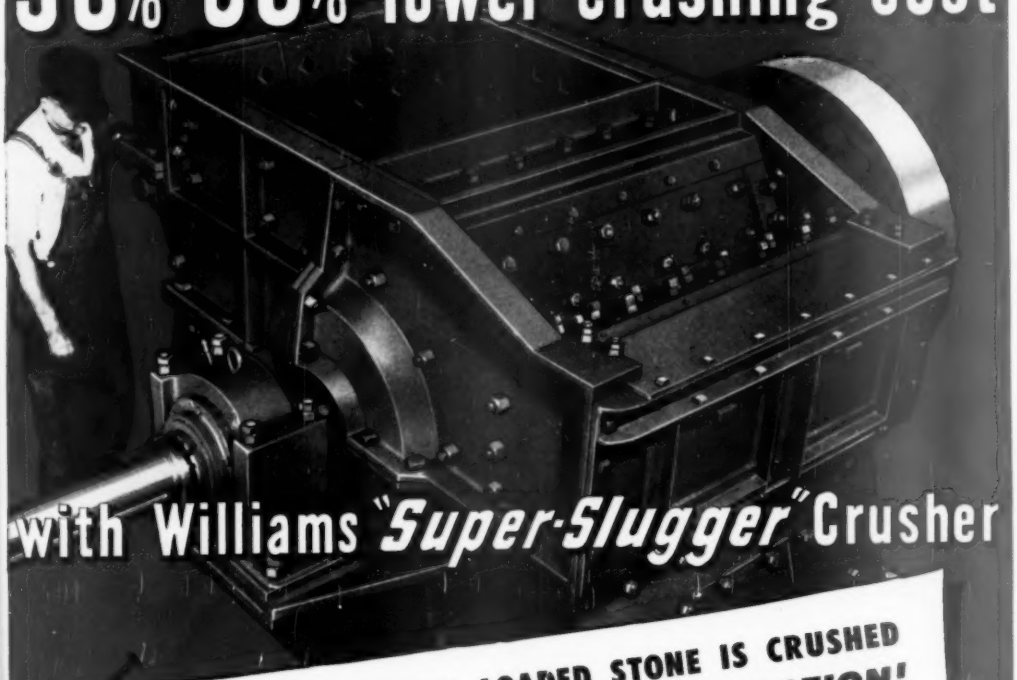
THE INDUSTRY'S RECOGNIZED AUTHORITY

ROCK PRODUCTS

LARGEST PRODUCER CIRCULATION IN THE HISTORY OF THE FIELD

Livingston Truck & Materials Co., plant, San Pedro, Calif.

30%-50% lower crushing cost



with Williams "*Super-Slugger*" Crusher

BECAUSE POWER SHOVEL LOADED STONE IS CRUSHED TO 1½ INCH OR ¾ INCH . . . *IN ONE OPERATION!*

Here's the extra heavy-duty hammermill that spells that welcome word *economy*. Built by Williams, the pioneer of the idea of crushing quarry stone to small sizes in one operation, the new Super-Slugger represents the latest improvements and the accumulated experience of many years in building heavy-duty hammermills. Savings result not only in initial investment . . . cost of foundations, conveyors, drives and buildings, but in faster operation and lower power consumption. If you require high tonnage output and a machine that can "take it" your investment in the Super-Slugger will pay off in more "pay-load" . . . and more profit! Write for Bulletin 634 for detailed information of the newest Williams Super-Slugger.

WILLIAMS ALSO MAKES . . .

Heavy-duty hammermills in smaller sizes for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "packaged" crushing and grinding plants.

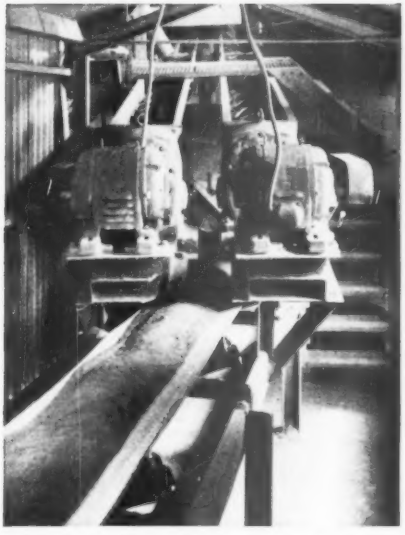
WILLIAMS PATENT CRUSHER & PULVERIZER CO.
800 ST. LOUIS AVE. • ST. LOUIS 6, MO.

Williams

CRUSHERS — DRIERS — SEPARATORS

"Mechanized" by LINK-BELT

Below: Two of four Link-Belt vibrating screens which discharge into Link-Belt Helicoid conveyors.



Parallel Helicoid (screw) conveyors individually driven by Link-Belt worm gear drives, discharge onto 18 inch Link-Belt belt conveyor, in larger illustration.

For Better Handling, Screening and Blending of Refractory Clay

Link-Belt Conveyors, elevators and vibrating screens function as parts of a well coordinated, efficient preparation process in the newly expanded plant of Big Savage Refractories Corporation at Frostburg, Maryland. Link-Belt belt conveyors, screw conveyors and bucket elevators carry the clay through all stages of preparation and perform important blending operations. Ground and mixed clay passes over Link-Belt vibrating screens at two stages in the process. And Link-Belt enclosed gear drives give efficient transmission of power for all conveyors and screens.

Link-Belt engineering, guiding the selection, arrangement and installation of these numerous elements, produces exceptionally smooth operation, efficient performance, and economical production.

For complete conveyor systems or individual equipment, get Link-Belt recommendations first.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Houston 3, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices in Principal Cities.

Types of Link-Belt Conveying Machinery

Belt Conveyors	Apron Conveyors
Screw Conveyors	Oscillating Conveyors
Bulk-Flo Conveyors	Flight Conveyors
Chain Conveyors	Bucket Elevators
Trolley Conveyors	Bucket Carriers

LINK-BELT

CONVEYING MACHINERY

"THE COMPLETE LINE"

ROCK PRODUCTS

SEPTEMBER, 1949 — THE INDUSTRY'S RECOGNIZED AUTHORITY — VOL. 52, No. 9

Bror Nordberg
Editor

Nathan C. Rockwood
Editorial Consultant

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Walter B. Lenhart, Associate Editor
David Mocine, Associate Editor
L. David Minsk, Associate Editor
M. K. Smith, Assistant Editor
J. Sedlack, Assistant Editor

Contributing Editors

Victor J. Azbe
Dr. F. O. Anderegg
M. W. Loving
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Home Office

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District Offices

Eastern Area—Richard Y. Fuller, Manager; John F. Lockitt, Assistant, 522 Fifth Ave., New York 18, Tel. Murray Hill 2-7888.

Central Area—R. P. Keine, Manager, Hanna Bldg., Cleveland 15, Tel. Main 4362.

Midwest Area—E. H. Hickey, Representative, 309 W. Jackson Blvd., Chicago 6, Tel. Harrison 7-7890.

Western Area—L. C. Thaon, Manager, 309 West Jackson Blvd., Chicago 6, Tel. Harrison 7-7890.

Pacific Area—Duncan Scott & Co., Mills Bldg., San Francisco 4, Tel. Garfield 1-7950. In Los Angeles 5, 2978 Wilshire Blvd., Tel. Dunkirk 8-4151. In Seattle, Wash., 827 Securities Bldg., Tel. Seneca 6135.

London, England—Harold F. Charles, Managing Director, Maclean-Hunter, Ltd., Sun Life of Canada Bldg., Trafalgar Square, London, S.W.I.

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B. F. Goodrich "rockroads" lower rock-handling costs

Conveyor belts for rock-handling that cut cost-per-ton

WANT to keep a crusher crushing, a stockpile stocked, do all rock-moving jobs more economically? A B. F. Goodrich "rockroad" conveyor belt will lower costs by lasting longer, and by requiring less maintenance during every year of its longer life.

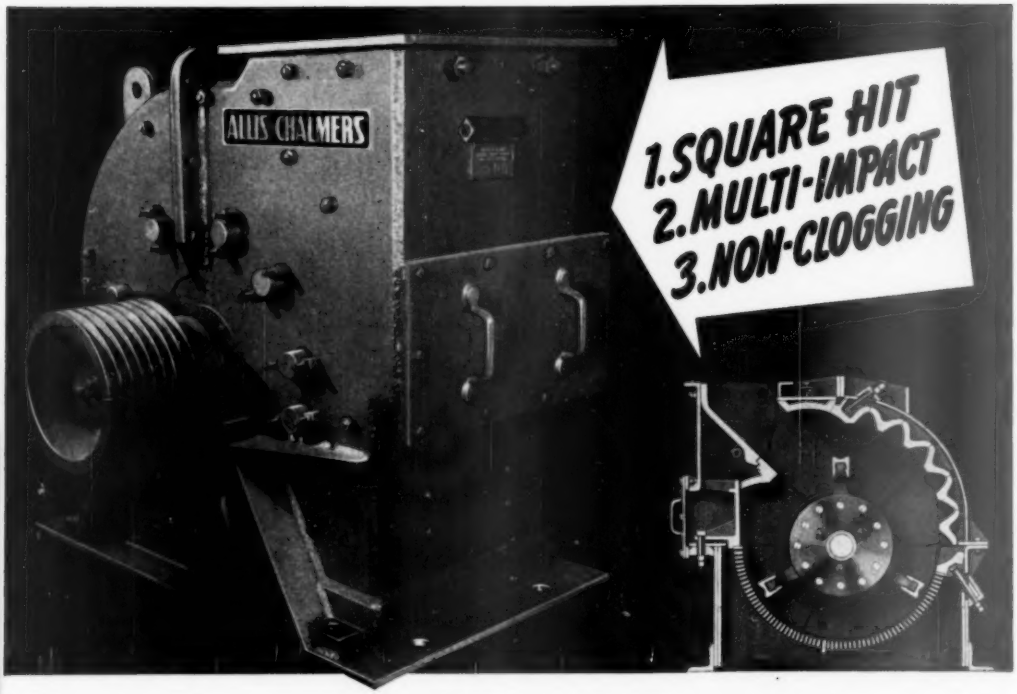
Take the operation shown above—moving rocks from primary to secondary crushing. Loading conditions are unusually severe. Rocks drop onto the belt, their fall only slightly broken by jingle bars. Ordinary conveyor belts were riddled with carcass breaks after a few months operation. B. F. Goodrich designed a belt that lasted *3 times as long* as belts that preceded it!

B. F. Goodrich "rockroads" are made in many constructions, each best for doing a particular kind of job economically. If your belts have to carry extra-heavy loads with long centers and high lifts, if they are exposed to moisture and acid materials, cord belts may be your best bet. But, if service is less severe all around, B. F. Goodrich fabric construction may be the best belt buy for you.

B. F. Goodrich invented the cord conveyor belt, and has since made many improvements in it that make this belt first choice for many really tough jobs. B. F. Goodrich has also developed the improved square-edge construction in the fabric type of belt, eliminating seams that affect troughing, helping keep the belt aligned properly, reducing edge wear and maintenance. B. F. Goodrich will engineer and specify the best construction for your particular job.

Whatever your need in conveyor belts—fabric, cord, or cable—see your local B. F. Goodrich distributor. Ask him to show you the better "rockroads" developed by B. F. Goodrich to lower costs, reduce down-time, and increase profits. *The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.*

B.F.Goodrich
RUBBER FOR INDUSTRY



Get Fine, Cubical Particles in One Pass with *Pulverator!*

A SQUARE HIT is the most powerful breaking blow. The *Pulverator* hammer mill utilizes this important principle of impact crushing — it's designed so that revolving flat hammers hit each bit of feed *squarely*.

"MULTI-IMPACT" PRINCIPLE

Not only that — feed is hit *repeatedly* in the *Pulverator*. A succession of involute breaker plates is so arranged that material rebounds from hammers to plates several times. Repeated square blows . . . not glancing blows . . . break up the material thoroughly.

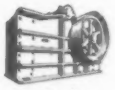
Feed particles are completely sized when they get to the bottom of the *Pulverator* . . . fall through grate bars readily. Power and maintenance factors are reduced materially because hammers do not drag through accumulated oversize on bottom of the machine.

CHECK THESE IMPORTANT FEATURES

- Renewable liners, breaker plates, hammers, hammer arms, grate bars.
- Hammers, grate bars also reversible.
- Grate bar spacers provide for product size adjustment.
- Removable doors . . . easy to service hammers, grate bars, rotor.

Five sizes handle up to 6-inch non-abrasive materials; capacities 2½ to 125 tons per hour. Get more facts from the A-C representative in your area, or write for **Bulletin 07B6265.** Allis-Chalmers offices or distributors in principal cities in the U. S. A. and throughout the world. A-2725

Kilns, Coolers, Dryers


Jaw Crushers

Hoists

Mills

Gyratory Crushers

Vibrating Screens

AND OTHER EQUIPMENT FOR THE CRUSHING, CEMENT AND MINING INDUSTRIES

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MILWAUKEE, WIS.

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ALLIS-CHALMERS

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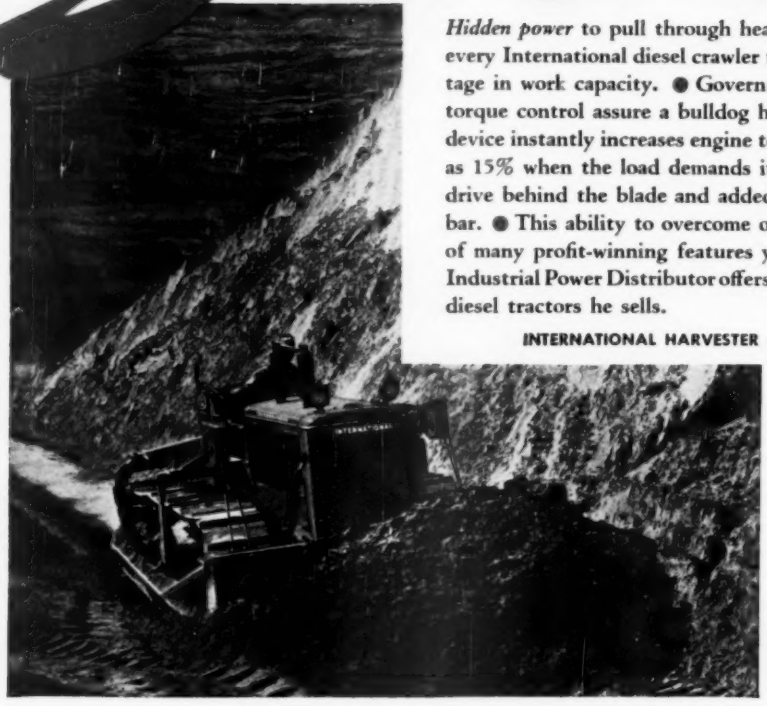
SUBMARINE BLASTING

GEEPER

Hidden power to pull through heavy going gives every International diesel crawler the winning advantage in work capacity. ● Governors with built-in torque control assure a bulldog hang-on. This device instantly increases engine torque as much as 15% when the load demands it, putting added drive behind the blade and added pull at the drawbar. ● This ability to overcome overloads is but one of many profit-winning features your International Industrial Power Distributor offers in the International diesel tractors he sells.

INTERNATIONAL HARVESTER COMPANY • CHICAGO



When this International TD-18 diesel took on its job of moving sand to a hopper in a pit near Los Angeles, you can be sure that production hit a new peak. With the right size International for the job, heavy loads, delivered quick, pay off in profits.

Standardize on Power that Pays

CRAWLER TRACTORS
WHEEL TRACTORS
DIESEL ENGINES
POWER UNITS

INTERNATIONAL HARVESTER

INTERNATIONAL INDUSTRIAL POWER

it's the Traylor T *for* Top Tonnages

More tons per hour . . . more tons per horsepower . . . *less cost per ton* . . . that's the story of the Traylor Type T Gyratory Crusher. For primary crushing operations of 8,000 tons per day, or more, this crusher can't be beat.

Outstanding design and sturdy construction are common features of every part of the Traylor T from the non-weaving, 2-arm spider to the water-cooled lube oil reservoir. The extra short, extra stout main shaft and long eccentric are typical of its ruggedness. The simple, effective dust seal shows how advance design is extended to every detail. Wearing ring of phosphor bronze and liberal use of cast steel and Meehanite* metal indicate the high quality of materials used throughout.

It all adds up to a long-wearing, crushing giant that can give you *bigger profits* on *every ton* you produce.

All mechanical details and tables of performance of the Traylor T are presented in Bulletin 4100. Write for your copy today.

TRAYLOR ENGINEERING & MANUFACTURING CO.
182 Mill Street, Allentown, Pa.

Sales Offices: New York, N. Y., Chicago, Ill., Los Angeles, Calif.
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.

THE TRAYLOR MODEL T BULLDOG

Gyratory Crusher is built in 13 sizes with feed opening from 21½"x14" to 60"x210". Also available in all sizes with Traylor's efficient bell head and curved concaves to eliminate choking and packing . . . produce a more uniform product.

Traylor
GYRATORY AND REDUCTION CRUSHERS
Jaw Crushers • Crushing Rolls
Rotary Kilns • Coolers • Dryers
Grinding Mills • Feeders

A "Traylor" Leads to Greater Profits

*Reg. U. S. Pat. off.

The PIONEER and still the LEADER!

JOY LIGHTWEIGHT WAGON DRILL

Introduced by JOY
8 years ago—hundreds
in use, nation-wide . . .

HERE'S WHY:

- MORE HOLE PER SHIFT with the *exclusive* "drill and blow" feature.
- REALLY LIGHTWEIGHT—only 750 lbs.—less than half the weight of conventional wagon drills.
- Easily operated by ONE MAN; mounts JOY 3" or 3½" drifters, or 55 or 65 lb. sinkers.
- POSITIVE LOCKING BRAKES—requires no spikes.

WRITE FOR BULLETIN

W&D C 2073

Consult a Joy Engineer

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GENERAL OFFICES: HENRY W. OLIVER BUILDING • PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

Daily double for pit and quarry work

HERE's the tire that pays off two ways on pit and quarry hauling everywhere — Goodyear's new, improved Road Lug. This remarkable double-duty work tire is specially designed for maximum tire performance both OFF *and* ON the road.

For rugged traction OFF *the road*— the Road Lug has big husky lugs, designed to grip on dirt, gravel and other off-the-road surfaces.

For smooth rolling ON *paved roads* — the lugs are joined at the center for long even wear.

Other outstanding features of this dual-purpose tire are: extra-strong carcass and undertread — tapered grooves between the lugs to prevent the picking up and holding of stones — wider-spaced, deeper lug bars. No doubt about it, Goodyear's new, improved Road Lug is your best bet for all-purpose hauling. Remember, always BUY and SPECIFY Goodyear *—it pays!*

The Super-Stamina Tire for OFF-THE-ROAD Hauling

THE HARD ROCK LUG

This extra-husky tire is best for all OFF-THE-ROAD *tire-ripping, tire-bruising jobs. Ask your Goodyear dealer about it now!*

Road Lug—T.M. The Goodyear Tire & Rubber Company

GOODYEAR

THIS HEAVY-DUTY OIL HELPS YOU CUT

DELVAC OILS

PROVED performance under toughest conditions!

APPROVED by 28 crane, shovel and dragline makers—10 tractor and 45 bus-truck builders!

● Delvac "900 Series" Oils are specially designed to keep your truck, tractor and other automotive-Diesel and carburetor-type engines on the job, working full time.

They're famous *heavy-duty* oils—give full engine protection throughout the entire operating temperature range...possess rich lubrication films that provide full piston ring seal, minimize blowby, reduce friction.

Delvac "900 Series" Oils combine exceptional oxidation resistance with special detergent properties to help keep engines clean. Contaminants remain in suspension, are easily removed by periodic crankcase draining. High resistance to chemical change protects hard alloy bearings against corrosion.

* * *

Get *correct lubrication!* Use Delvac Oils!

DOWN-TIME . . . BEAT CONTRACT DEADLINES!

"160,000
miles with Delvac"

●One large operator of heavy-duty trucks reports his fleet averages 26,000 miles weekly at ungoverned speeds. He maintains a rigid lubrication and inspection schedule every 2,000 miles. The bearing shown above was photographed after 160,000 miles of service on Delvac Oils... unusually long life made possible with *Correct Lubrication!*

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and Affiliates: MAGNOLIA PETROLEUM CO.
GENERAL PETROLEUM CORPORATION

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Contractors' Service

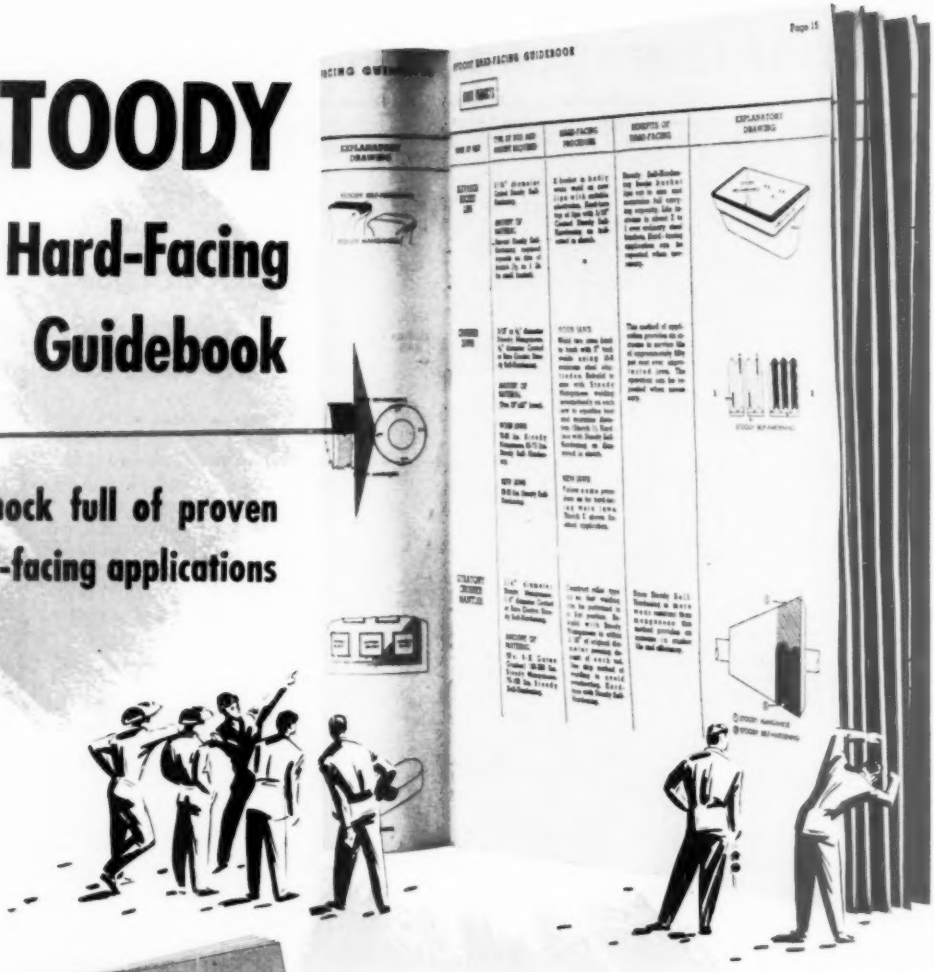
Keeps machines on the job...
Speeds work progress!

SOCONY-VACUUM

STOODY

Hard-Facing Guidebook

chock full of proven hard-facing applications



a valuable aid to maintenance men!

A lot of hard-facing success is in the use of correct alloys applied in the right way. If you want to eliminate failures, gain utmost life increase and savings in equipment dollars—get your copy of the STOODY HARD-FACING GUIDEBOOK!

Clear, concise descriptions of each hard-facing application provide the all-important know-how for common earth handling-crushing-mixing equipment in your industry. It costs you nothing—may provide the answers to more economical operation, fewer equipment breakdowns, more profit!

Simply ask for the "STOODY HARD-FACING GUIDEBOOK" on your letterhead; it will be mailed post-paid to your personal attention. *But it can't help you until it's in your hands—Write today!*

STOODY COMPANY

11929 EAST SLAUSON AVENUE, WHITTIER, CALIFORNIA

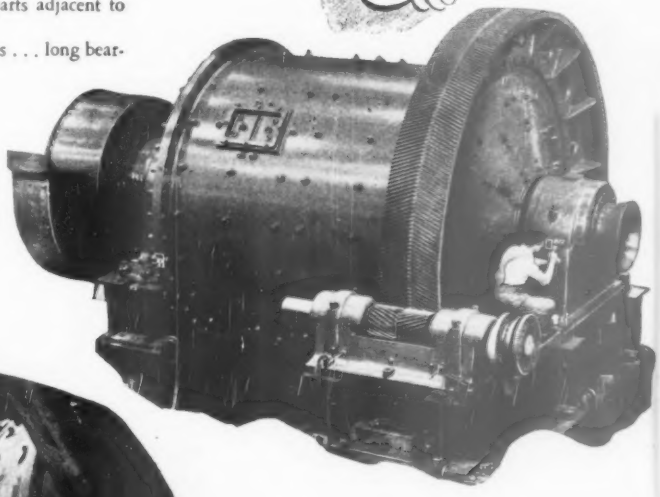
2 Things to Consider in Buying Grinding Mills...

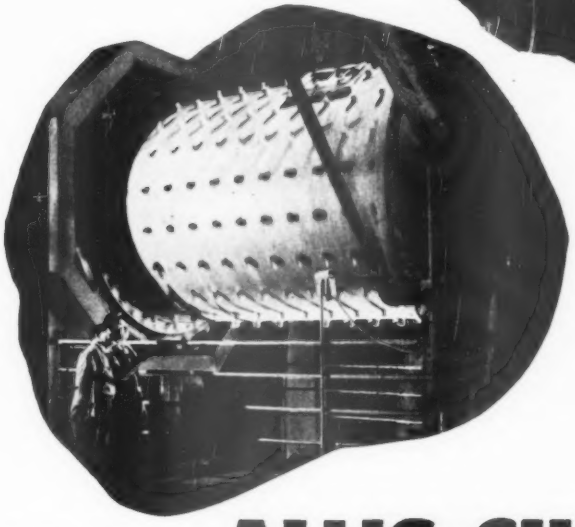
INSIST ON STURDY MILL CONSTRUCTION

You'll find extra-strength features a-plenty in Allis-Chalmers *grinding mills!* All-welded mill shells, for example, are "stress-relieved" in Allis-Chalmers' huge annealing furnaces. That means longer mill life . . . because parts adjacent to welds are relieved of all strain.

Large bearings mean low bearing pressures . . . long bearing life. The use of conical mill heads gives you the highest strength per pound of metal used.

Experience is another advantage you get when you specify Allis-Chalmers. Experience gained in building over 4,000 *grinding mills*. Experience in improving grinding mill design to the point where you'll get minimum maintenance . . . freedom from costly shut-downs . . . efficient operation year after year — from Allis-Chalmers!





AND LOW-COST OPERATION . . .

Best grinding economy is possible only when the type and size of your mill is specifically suited to your job. Allis-Chalmers builds *five separate types of grinding mills* . . . in a wide range of sizes . . . available in overflow, diaphragm grate, or any special type with feeders and drives designed to give you top grinding efficiency.

There is an Allis-Chalmers representative near you who will be glad to discuss your grinding problems with you. Call him today. Offices or distributors in principal cities in the U. S. and throughout the world. A-2659

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MILWAUKEE, WIS.

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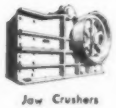

Jaw Crushers

Gyratory Crushers

Vibrating Screens

Kilns, Coolers and Dryers

Hoists

. . . and Other Equipment for the Crushing, Cement and Mining Industries

DUMPTOR no-turn shuttle STEPS UP OUTPUT 11.6%

You save 2 slow turns every trip ... travel at same speed both ways

You save turn time . . . gain more productive haul time on shuttle hauls with Dumptors because Koehring constant-mesh transmission makes the same three speeds available in either direction. Time studies prove that elimination of two turns every trip — one at the loading unit, one at the dumping unit — often saves as much as 30 seconds every round trip. On a 1,000' haul (15.4 round trips per hour) Dumptor No-Turn Shuttle Operation gains 7.7 minutes every hour. Table at right quickly shows you what this factor alone can mean to you in extra yardage gained.

What's more — fast, easy spotting and 1-second gravity dump keep production high. For faster hauling on your off-the-highway jobs, see your Koehring distributor TODAY.

KOEHRING COMPANY

Subsidiaries: JOHNSON • KWIK-MIX • PARSONS

Haul per UNIT

	No-Turn Shuttle Operation	2-Turn Shuttle Operation
Time Per Trip	3.9 min.	4.4 min.
Trips Per Hr.	15.4	13.6
Yards Per Hr.	69	61

(4.5 Yd. Payload)

Yardage Gained — 8 yds.
(11.6% per unit per hour on 1000' haul.)

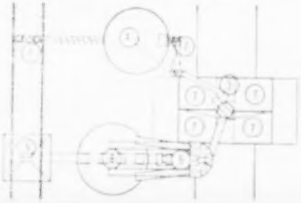
MILWAUKEE 10, WISCONSIN

New JOHNSON Ready-Mix Plant Complete in ONE PACKAGE

Here's How it Works

Bulk cement, received by rail or truck, conveyed by screw conveyor from cement receiving hopper (1), to bucket elevator (2), is discharged into central cement storage compartment of bin (3), or auxiliary cement storage silo (4).

Aggregates, received in hopper bottom cars or trucks, conveyed by belt-feeder from aggregate receiving hopper (5), to aggregate bucket elevator (6), are discharged into aggregate compartments (7), of 100-yard bin or aggregate storage silo, (8), or two-in-line silos. Johnson Concentric Batcher and Johnson Water Weigh Batcher, both on batcher floor below bin, discharge into the mixer or through the other leg of 2-way batcher-discharge directly into a truck-mixer.



High Production . . . New Low Investment

Because new conveyor and elevator system provides for ground storage of both cement and aggregates, you need less overhead storage capacity. Result: Lower investment cost that reduces your cost per yard of concrete.

50% Lower Erection Cost

Erection cost of new Johnson Ready-Mix Plant is reduced by approximately 50%. Welded units can be erected in half time it takes to put up "bolted" plant. Means important saving.

Quickly, Easily Moved

Prefitted units disassemble fast. Bin sections and steel silos fit railroad cars and flatbed trucks. Ship anywhere—to bridge jobs, dam jobs, school and hospital jobs — wherever on-job mixing will pay you.

Overhead Storage Easily Increased

By adding a welded section to the elevators and the bin, overhead bins can be easily and economically increased from 100 yard to 150 yard storage capacity.

Contact Johnson today for New Concrete Plant Catalog.

THE C. S. JOHNSON COMPANY
KOEHRING SUBSIDIARY • CHAMPAIGN, ILLINOIS

At Consolidated Rock Products Company —the 15th, 16th and 17th Symons Cones

Symons Cone Crushers are built in Standard, Short Head and Intermediate types with capacities from 6 to 900 tons per hour to fit all your fine crushing operations.

C849

MORE repeat orders for Symons Cone Crushers from another of the nation's leading aggregate producers! These three Symons Cones operating in closed circuit handle all final crushing operations and increase this Irwindale, Calif., aggregate plant's capacity to 1,000 tons per hour. Whenever you want to increase your production of finer sizes, be sure you get a Symons Cone Crusher.

For your other aggregate producing needs, write for literature about Nordberg Primary Gyratory and Jaw Crushers, Vibrating Screens, Grizzlies, Feeders and the complete line of Diesel Engines for all power applications.

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NORDBERG *Machinery for processing ores and industrial minerals*

Gyratory and Jaw Crushers

Symons Cone Crushers

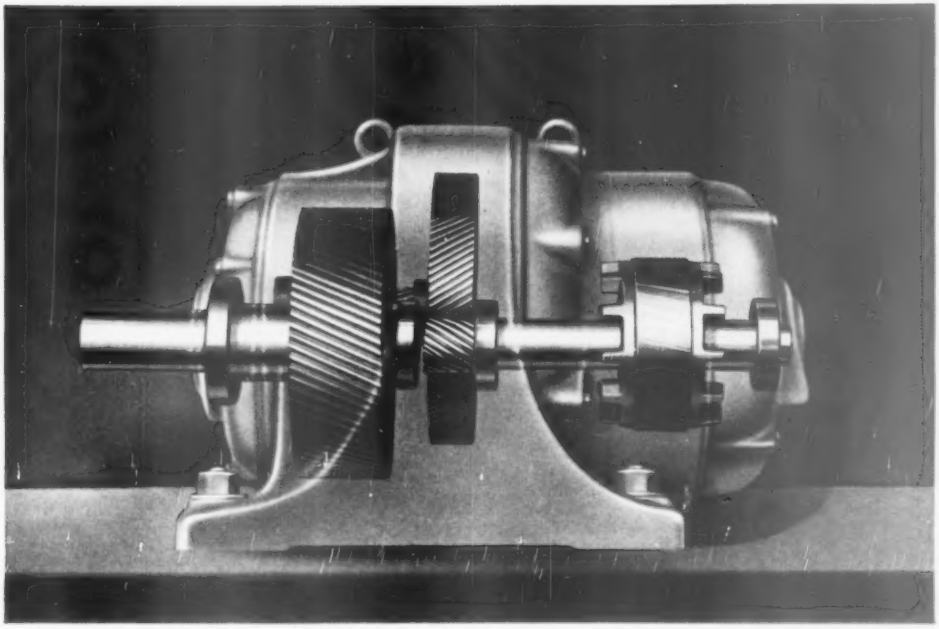
Vibrating Screens and Grizzlies

Grinding Mills

Diesel Engines

ADDING MULTIPLIED TORQUE TO ROCK PRODUCTS PLANTS

AMPLE TORQUE, DEVELOPED BY INTERNAL GEARING, GIVES BETTER POWER



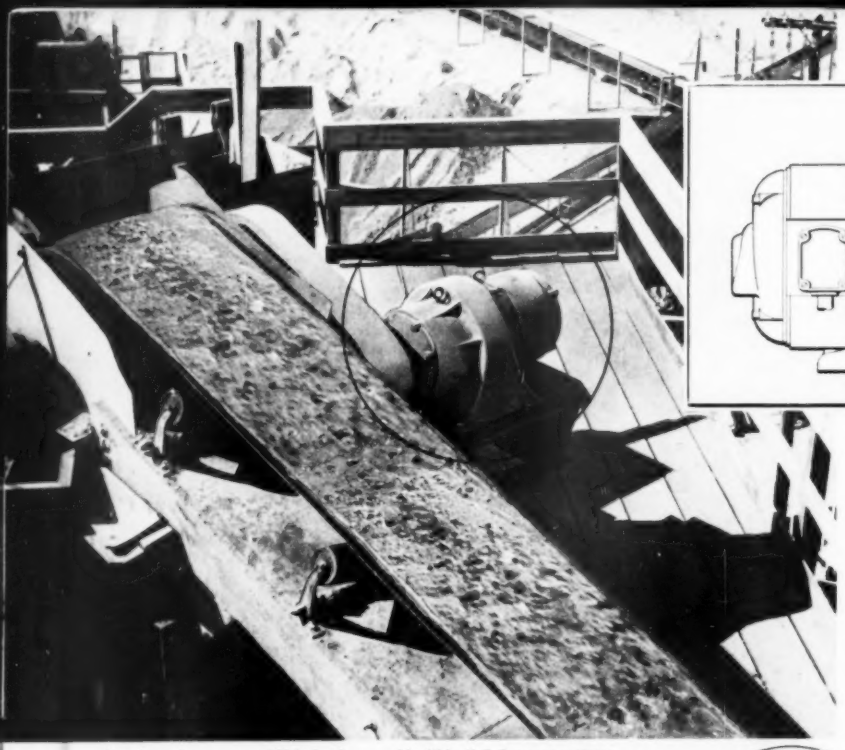
Diaphanous view of U. S. Syncrogear Motor

THE GEARED MOTOR WITH PYRAMIDAL STABILITY

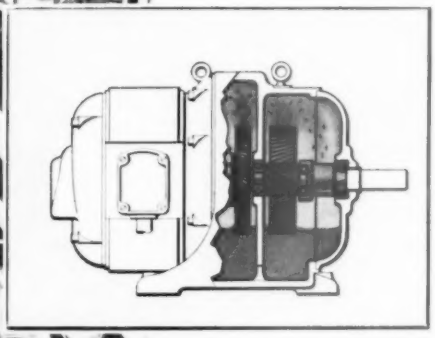
ROCK PRODUCTS PLANTS require electric drives of high torque, low speed output. The solution is found by the ideal combination of an efficient, compact, high speed motor with torque multiplying, built-in gearing. Successful design must provide for multiplied torsional forces; stresses must be supported by a non-yielding, permanently rigid member; gears must precisely match forever; all castings must maintain their original accuracy. In the *U. S. Syncrogear* these recognized engineering fundamentals are combined. The rugged *pyramidal* gear pedestal provides structural stability. Gears are produced by U. S. Motors for industrial gear motor service. Electrical design is coordinated to give optimum over-all performance. 10 to 10,000 rpm.

U. S. SYNCROGEAR MOTOR

(Turn to next page)



Top of a rock conveyor at 100-ft. level powered by 30 hp U. S. Syncrogear Motor



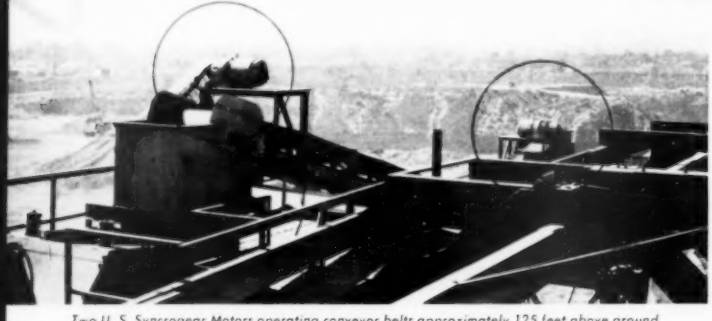
The motor that is designed for heavy drag loads where plenty of torque is needed.

Below:
U. S. Syncrogear, 25 hp operating conveyor from pit to 50-ft. level.

U. S. SYNCROGEAR MOTOR

THE MODERN GEAR DRIVE FOR EXPOSED SETTINGS

A drip-proof motor is superior to an open motor for heavy-duty conveyor service. The U.S. Syncrogear Motor can be selected with gear ratios to give you any desired torque. It's completely housed. You can install a Syncrogear out in the open. No cover is needed. It's built for rugged, heavy duty service, in single, double or triple reductions. No external gear box is required. Note in the colored drawing that the major gears only dip into the lubricant rather than being immersed. This prevents churning and lengthens life of the lubricant.



Two U. S. Syncrogear Motors operating conveyor belts approximately 125 feet above ground.

ALL THESE ADVANTAGES

WEATHER-PROOF AND DRIP-PROOF
COMPLETELY HOUSED—ONE UNIT
NO HARM FROM DUST OR DIRT
GEARED TO ANY DESIRED RATIO
RUGGED PYRAMIDAL BASE
HARDENED GEARS—45/50 ROCKWELL C
ASBESTOS-PROTECTED WINDINGS
NORMALIZED CASTINGS
LUBRIFLUSH LUBRICATION
SEALED OIL RESERVOIR
CENTRIFUGALLY-CAST ROTOR
DUAL-BLAST VENTILATION

Ask for new descriptive U. S. Syncrogear Bulletin

U.S. ELECTRICAL MOTORS Inc.

PACIFIC PLANT: Los Angeles 54, Calif. • ATLANTIC PLANT: Milford, Conn.

District Offices: Boston 16, New York 6, Philadelphia 2, Pittsburgh 22, Chicago 8, San Francisco 7, Seattle 4

added safety means added production

ALONG THE IRON RANGE!

Here are just a few of the Added Values that change down-time and delays into actual digging time . . . added production.

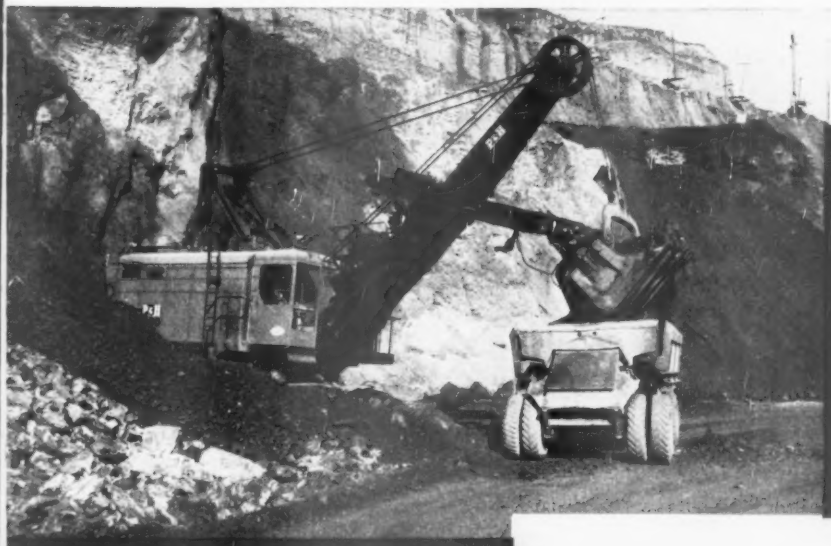
"Run away" Dangers eliminated — independent propel keeps crawler geared to propel power at all times.

Automatic Safety Brakes — prevent damage and delays — all brakes are spring set automatically when power is cut off.

Excessive Boom Jacking is prevented — P&H's boom limit switch positively prevents raising boom above normal position. You save on boom cable replacement costs.

Accessible Controls — all controls including propel brakes and steering are within easy reach of the operator.

These and other important Added Values explain why users along the Iron Range are reordering P&H Electric Shovels.



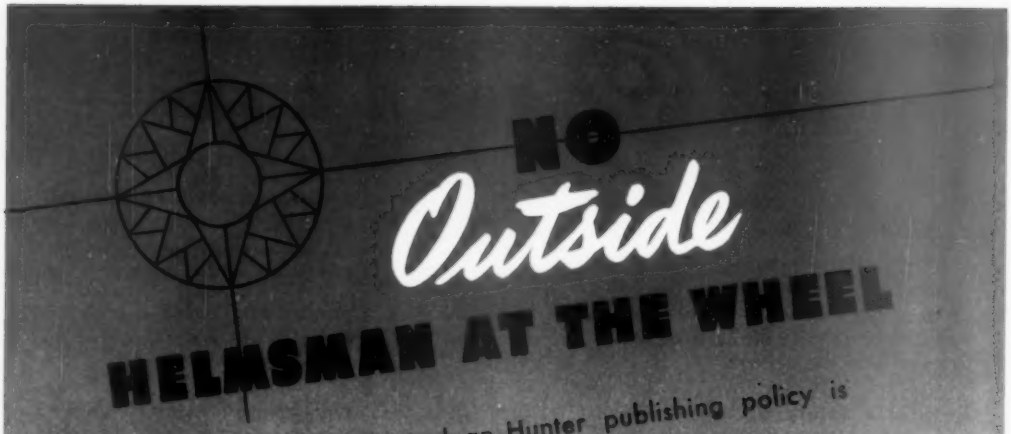
Every Third P&H Electric Shovel Sold is a Repeat Order

P&H

CORPORATION

LEADING THE FIELD IN ELECTRIC SHOVEL DEVELOPMENT

EXCAVATORS • OVERHEAD CRANES • ARC WELDERS and ELECTRODES • SOIL STABILIZER • CRAWLER and TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PREASSEMBLED HOMES



NO Outside HELMSMAN AT THE WHEEL

A cardinal point of Maclean-Hunter publishing policy is Independence.

The Editor alone decides what goes in the editorial columns.

The Publisher alone rules on acceptability of advertising.

The sole gauge is Public Interest.

There is no other influence. No political bias. No tie-in with any organization.

Your advertisement commands attention from readers who rely on the paper's integrity.

THE FOUR CARDINAL POINTS OF MACLEAN-HUNTER'S COMPASS ARE:

1. Editorial Service. The Reader Comes First.
2. Complete Independence. No Political or Association Affiliations.
3. Efficient Circulation Methods. Building Just the Right Audience.
4. Advertising Space Sold on Value and Proven Readership.

ROCK PRODUCTS
is a
MACLEAN-HUNTER
Publication

Maclean-Hunter

MACLEAN-HUNTER Publishing Company Limited
Toronto — Montreal

MACLEAN-HUNTER Publishing Corporation
Chicago — New York

MACLEAN-HUNTER Limited
London, England

Boosting PLANT Capacity with Gyratory Crushers

TELSMITH

THE PALMER CRUSHING CO., SLINGER, WIS.—a top producer in the Milwaukee area—installed Telsmith gyratory crushers to boost plant capacity. A typical glacial moraine deposit with a high percentage of very hard boulders—their pit runs about 65% gravel and 35% sand. A large percentage has to be crushed. The plant, when first built, used a Telsmith 13-B Gyratory as the primary and a double roll crusher as the secondary. Replacing the roll crusher with a Telsmith 36 Standard Gyrasphere Secondary Crusher *upped capacity* 40 to 50%. Now the plant turns out about 225 tons hourly of aggregate, for concrete or for railroad ballast. Two Telsmiths do all the crushing—turn out well-cubed products—and still have plenty of crushing capacity in reserve. A Telsmith Sand Classifier, with 20" x 15' twin screws, recovers all sand. In this plant it was Telsmith Equipment *again* for Mr. Palmer. The reason—Telsmith big capacity and better performance in his two other plants. Get Bulletin 272.

G-17

SMITH ENGINEERING WORKS, 508 E. CAPITOL DR., MILWAUKEE 12, WISCONSIN

Cable Address: Sengworks, Milwaukee

51 East 42nd St. New York 17, N. Y. • 211 W. Wacker Drive Chicago 6, Ill. • 713 Commercial Trust Bldg. Philadelphia 2, Pa. • 238 Main Street Cambridge 42, Mass. • Boehck Eqpt. Co. Milwaukee 3, Wis. • Brandeis Mach. & Supply Co., Inc. Louisville 8, Ky.

Clyde Equipment Co., Portland 9, Ore., & Seattle 4, Wash. • General Machinery Co., Spokane 1, Wash. • Interstate Equipment Co., Statesville, N. C. • Rish Equipment Co., Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va. • Wilson-Weesner-Wilkinson Co., Knoxville 8, & Nashville 6, Tenn.

for strip or underground operations...

McLANAHAN

Bantam Buster

SINGLE ROLL

CRUSHERS

- Single and Double Roll Crushers (Primary and Secondary)
- Heavy Duty Rock Crushers — Automatic Steelstrut Toggle, Quick Adjustment and Pioneer series
- Double Roll Fabricated Steel Crushers
- Jaw Crushers
- Portable and Semi-Portable Crushing Plants
- Dry Pans Super Heavy Duty
- Conveyors
- Dryers of Revolving Type
- Elevators
- Feeders
- Hoists
- Ore Jigs
- Screens
- Washers & Scrubbers
- Special Machinery and Complete Plants

•HIGH-RATIO REDUCTION
•LOW INITIAL COST
•TROUBLE-FREE MAINTENANCE
•PORTABLE—Self-contained units

The McLanahan Bantam Buster Fabricated Steel frame crushers answer the need for a dependable, low cost machine that does the job with minimum operating and maintenance expenses. These rugged, high-ratio crushers take a larger feed than equivalent crushers. They easily crush different size feeds of hard and soft coal to various size products.

Available in many sizes 18" diameter up to 42" wide, and 24" and 30" diameters up to 48" wide. They are adaptable for most any installations. The crushing plate is hinged to permit different adjustments; alemite lubricated babbitted or roller bearings carry the roll and counter-shafts. Safety adjusting. Write for descriptive technical bulletins.

Some Sizes Available for Immediate Shipment

Headquarters for Pit, Mine and Quarry *Modernization*

McLANAHAN and STONE Corp.

HOLLIDAYSBURG, PA.

Since 1835

The Heiloader hydraulically-operated truck tailgate handles a capacity load of 2000 lbs. Use it to save time and money.

Heil Bodies and Hoists

assure less downtime..because

(1) HEIL Bodies use both cross members and long members of the subframe for support, giving you extra strength and longer life

(2) HEIL Hydraulic Hoists are so reliable that you never have to replace a piston due to wear

More days on the job, lower maintenance and repair expense mean *lower hauling costs* with Heil Bodies and Hoists. These money-saving dump units are built to stand up under heavy punishment — to stay on the job and get results. For full information on Heil Bodies and Hoists send in the coupon below, today. BH-141A

Heil's standard contractors' body has V-section side braces that prevent tailgate spreading.

Heil's heavy-duty rock body for off-the-highway operations. 70° dumping angle gives fast, clean discharge.

There's a sturdy Heil Power Take-off for every make of truck transmission.

Only two wearing parts in a Heil oil-gear pump —and they are reversible and easily replaced.

Heil's platform conversion hoists convert any fixed-bed truck into a time-saving dump unit.

THE HEIL CO.

Factories: Milwaukee — Hillside, N. J.
District Offices: Hillside, Washington, D. C., Atlanta, Milwaukee, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Los Angeles, Seattle

THE HEIL CO., Dept. 7799, 3077 W. Montana St., Milwaukee 1, Wis.

Please send me bulletins describing the dependable Bodies and Hoists shown in this advertisement.

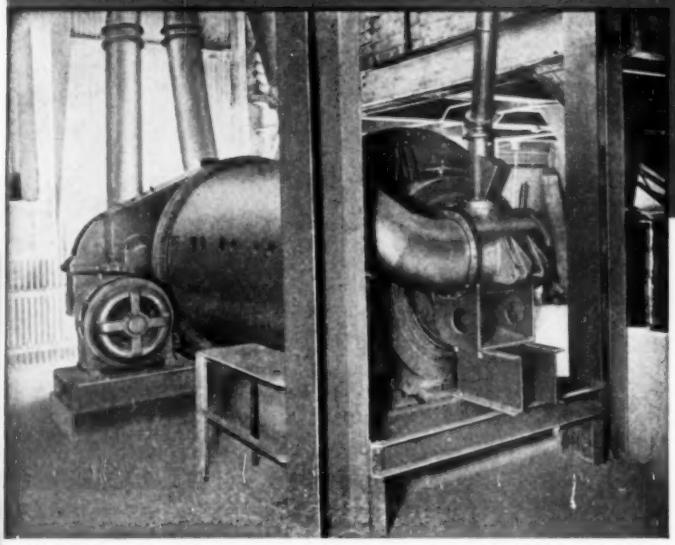
Name.....Title.....

Company.....

Address.....

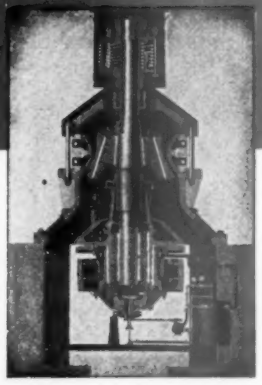
City.....(.....) State.....

KVS *Machinery for* AGRICULTURAL LIMESTONE AND LIME MANUFACTURE



THIS 5½' x 8' KENNEDY AIR SWEPT TUBE MILL PRODUCES 7 TONS PER HOUR—With a feed of ¼ x ¾ in. limestone and dust

Use the Kennedy Air Swept Tube Mill to get superfine grinding at bottom costs. The product ground in this tube mill and collected in three cyclones is (1) 5 tons per hr. of 80% thru 200 mesh, (2) 1 ton per hr. of 92% thru 200 mesh, and (3) 400 lbs. per hr. of 99.8% thru 325 mesh. Simple adjustment permits a desired variation from this combination of fine mesh sizes. The mill is driven through the remarkable Kennedy Integral Gear Drive for Tube Mills. This enables the motor to be direct-connected to the high speed shaft. The gears cannot be misaligned or set wrong. Power required to drive the mill is thus greatly reduced.



KENNEDY ROLLER BEARING GEARLESS CRUSHER . . . .

With a Synchronous Motor built in its pulley, this machine shows 80% saving in the cost of maintenance and a saving of 50% in power over geared crushers. It has produced 156 tons per hour when set to 7/16" between the head and concaves at the bottom. The motor runs on roller bearings and is continuously lubricated by a force feed lubrication system. The motor is built especially for this crusher.

It is now possible to combine the superior product of a rotary kiln with the operating economy of a vertical kiln with the Kennedy Stone Preheater and Deheater. By partial calcining the material this system reduces kiln wear and kiln lengths. It recovers and utilizes exit gases, and has proved so efficient in actual operation that 40% fuel savings and increased output exceeding 20% have been obtained.

Short kilns employing the Kennedy method also acquire an internal glaze which lessens the wear on kiln liners, lowers the power requirements, and reduces formation of kiln rings. Overburned and underburned lime is practically eliminated. Coal feed and lime calcination are switchboard controlled.

20% Increase in Capacity—40% Savings in Fuel

Kennedy-Van Saun Manufacturing and Engineering Corp.
2 Park Avenue, New York 16, N. Y.

DOWNTIME SLASHERS— YARDAGE MAKERS— MONEY SAVERS...

Firestone OFF-THE-HIGHWAY TIRES

ROCK GRIP

GROUND GRIP

The maximum traction tire that keeps pulling for you anywhere on earth.

EARTH MOVER

The tire for free-rolling wheels that gives better flotation and longer life.

IT TAKES a tire that's tougher than rock for quarrying, strip mining, and other severe operations, a tire that will take hold and GO . . . with heaping loads, right over the most treacherous terrain. The ONE tire that will do just that, day in and day out, is the Firestone Rock Grip.

Its thick, tough, "elephant-hide" tread is extremely resistant to cuts and snags. Those rugged power bars in the tread deliver plenty of traction, provide quiet rolling on pavement. The bodies of these tires are fortified to stand up, even under the most unmerciful beating. Their extra-strong, low-stretch, Gum-Dipped rayon cords prevent tire growth and preserve body strength for extra retreading.

Firestone Rock Grips will shorten your downtime, increase your yardage, and broaden your margin of profit.

Listen to the Voice of Firestone every Monday evening over NBC

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When you buy replacement tires or new equipment SPECIFY— Firestone OFF-THE-HIGHWAY TIRES

Your

Union Multiwall Specialist

Knows many ways to cut packaging costs

HOW LONG has it been since an *expert* analyzed your packaging methods?

Recent improvements in packaging methods and materials now make Union Multiwall Bags the preferred packaging for many different commodities . . . over 300 in all. They speed up packaging, cut labor and shipping costs, guard against contamination.

Even if you're now using multiwall bags, the Union Multiwall representative who calls on you can give you new ideas that may save you money. For he is backed by the specialized packaging knowledge of America's largest maker of paper bags—with its own forests, the largest completely integrated Kraft pulp-to-bag plant in the world, and skilled engineers and designers.

Let him show you how Union resources and packaging experience can help you!

Multiple Protection

Opens Easily

Prevents Siftage

Empties Clean

TRADE MARK UNION

UNION Multiwall Bags

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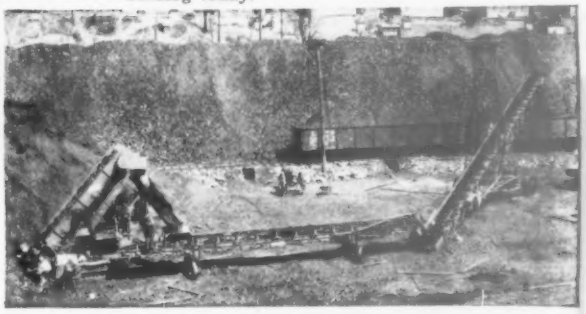
HAISS LOADER IN ACTION
(Note the full Buckets)

HAISS
•BUCKET LOADERS

Load 3 To 8 Yards Per Minute

Haiss Bucket Loaders are used for excavating — rehandling — stripping and loading: sand — gravel — stone top-soil — coal and similar materials. Self Propelled, Self Feeding — wheel or crawler mounted — One man operation. Write for Bucket Loader Catalog today.



HAISS LOADER and
Conveyors Combination

•CONVEYORS portable or stationary

HAISS FLAT or TROUGH BELT CONVEYORS
(Model 481 and 482)

For all bulk materials. Mounted on "V" or mast truck with swivel wheels. Ask for Bulletin No. 481 for coal or coke handling—Bulletin No. 482 for sand and gravel, etc.

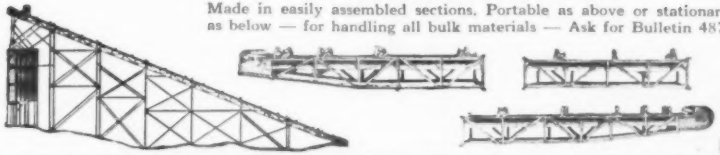
CAR UNLOADERS

HAISS CAR UNLOADERS
(Models 483 and 484)

Belt and drag types for low-cost undercar unloading from hopper bottom cars. Ask for bulletin No. 483-4.

HAISS SECTIONAL CONVEYORS

Made in easily assembled sections. Portable as above or stationary as below — for handling all bulk materials — Ask for Bulletin 487.



•BUCKETS

EXCAVATING — REHANDLING

Experienced Haiss representatives are located in all principal cities. For further information, write, phone or wire.

GEORGE HAISS MFG. CO., INC. division of PETTIBONE MULLIKEN CORP.

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4700 W. Division St. CHICAGO 51, ILL.
Phone Spaulding 2-9300

How Bucyrus-Erie Blast Hole Drills Can Save You Money

MORE WORKING TIME PER SHIFT

It's only natural for economy-minded mine and quarry owners to choose Bucyrus-Erie blast hole drills for their rock preparation, because these hard-hitting rigs reduce waste time . . . spend more hours drilling per shift. Here are the reasons why:

1. **Big Full Length Caterpillar Mountings** enable these rigs to move quickly from one drilling site to the next. Steering like tractors, with the controls at the operator's position, they can travel easily over rough surfaces, through mud and sand, over rocks, and up steep grades. Such mobility means extra time to take advantage of the fast, rock-shattering Bucyrus-Erie drilling action.

2. **Permanently Attached Screw Type Jacks,** standard equipment on all Bucyrus-Erie blast hole drills, make possible quick easy set-ups by cutting out the need for elaborate ground preparation at new locations. Hydraulic jacks, offered as optional equipment with the 42-T, entirely eliminate all blocking and cribbing . . . produce great savings in time by providing stable three-point leveling of the drill, often in a matter of seconds.

3. **Built-In Tool Wrenches** on all models except the 22-T, break tool joints quickly . . . eliminate the back breaking labor and delay involved in handling heavy tool wrenches. They bring savings by helping to change costly preparation time into productive drilling time.

23848

It will pay you to check these Bucyrus-Erie blast hole drills when you plan your new equipment purchases:

22-T	5⅝"	to 6⅝"	holes
27-T	6"	to 6⅝"	holes
29-T	6"	to 9"	holes
42-T	9"	to 12"	holes

Gasoline or electric power is available for all machines, diesel for all except the 22-T.

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

These Vital Parts fit *ALL* GM "71" DIESELS

Every GM Series 71 Diesel engine, whether a two-cylinder or one of a Quad 6, *has the same bore and stroke.* This means that practically all moving parts are exactly the same for any size Series 71 engine from 43 to 520 continuous B.H.P.

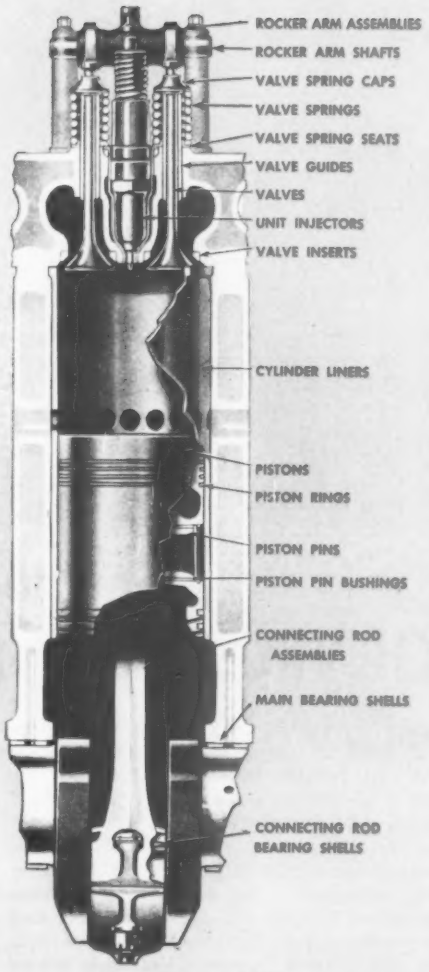
For example, all of the GM Diesel parts shown here, plus dozens more, are completely interchangeable, regardless of the number of cylinders, horsepower, age or usage of the engine.

To large contractors, oil drillers, truck or boat fleet operators, this unique feature of GM Diesel design means lower parts inventories and less time out for maintenance.

To the individual owner, it brings a no less important benefit. A *single* inventory of basic parts on the distributor's shelves increases the availability to owners of the *right* part when it is needed.

Maximum parts interchangeability is just one of the many *plus* values that go with your purchase of General Motors Diesel engines—a good reason why it pays to *standardize* on GM Series 71 Diesels.

For topmost satisfaction and reliability, always buy genuine "Factory-Engineered" GM Diesel parts from your authorized distributor or dealer.



CUTAWAY OF CYLINDER FROM GM SERIES 71 DIESEL

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES...Up to 200 H.P. **DETROIT 28, MICHIGAN** MULTIPLE UNITS...Up to 800 H.P.

GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

Bigger Value for Every Job

CHEVROLET ADVANCE-DESIGN TRUCKS

CHEVROLET

It takes a truck operator to really evaluate a truck. Yes, the man behind the wheel is the one who can best appreciate the worth of powerful yet economical performance . . . extraordinary load capacity . . . lasting quality, ruggedness and handling ease. He's the one who recognizes the advantages of new, improved features—of greater comfort and convenience for the driver. And these men in the drivers' seats—these experienced truck operators across America—know that Chevrolet trucks deliver more of the value factors they want. They know that Chevrolet trucks cost less to operate, less to maintain, and have the lowest list prices in the entire truck field. That's why they use more Chevrolet trucks than any other make! Your Chevrolet dealer will give you the facts in detail!

CHEVROLET MOTOR DIVISION, *General Motors Corporation*, DETROIT 2, MICHIGAN

TOP-VOLUME PRODUCTION BRINGS YOU TOP-VALUE FEATURES!

Chevrolet's new 4-SPEED SYNCHRO-MESH TRANSMISSION offers quicker, quieter and easier operation. Double clutching is eliminated because the gears are always in mesh. Faster shifting maintains speed and momentum on grades. Available in series 3800 and heavier duty models.

Chevrolet's power-packed VALVE-IN-HEAD ENGINES provide improved durability and efficiency as well as the world's greatest economy for their size!

Chevrolet trucks have the famous CAB THAT "BREATHES"*! Outside air is drawn in and used air forced out! Heated in cold weather.

Chevrolet Advance-Design brings you the FLEXI-MOUNTED CAB, cushioned on rubber against road shocks, torsion and vibration.

Chevrolet's exclusive SPLINED REAR AXLE HUB CONNECTION adds greater strength and durability to heavy-duty models.

Uniweld, All-Steel Cab Construction • Large, Durable, Fully-Adjustable Seat • All-Round Visibility with Rear-Corner Windows* • Heavier Springs • Super-Strength Frames • Full-Floating Hypoid Rear Axles in the 3600 Series and Heavier Duty Models • Double-Articulated Brake Shoe Linkage • Hydravac Power Brakes in Series 5000 and 6000 Models • Multiple Color Options.

**Heating and ventilating system and rear-corner windows with de luxe equipment optional at extra cost.*

CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!

7 Reasons WHY YOU GET LOWER COST PER TON CRUSHED with LIPPMANN GRIZZLY KING CRUSHERS

Here's the Jaw Crusher You've Been Waiting for . . . With Increased Capacity, Lower Operating and Maintenance Costs, Greater Flexibility!

1. 25% More Crushing Area plus reduced angle of nip gives the long-jawed Grizzly King extra capacity even when crushing extremely hard rock.

2. Wide Range of Product Sizes permits great flow sheet flexibility. Instead of the usual 4-to-1 or 6-to-1 reduction ratios, Grizzly Kings can outproduce comparable machines even when set at 8-to-1 or 10-to-1

3. Positive Setting Control is accomplished by means of shims. It's simple, quick, positive. And pressure is distributed over the full bearing area at all times.

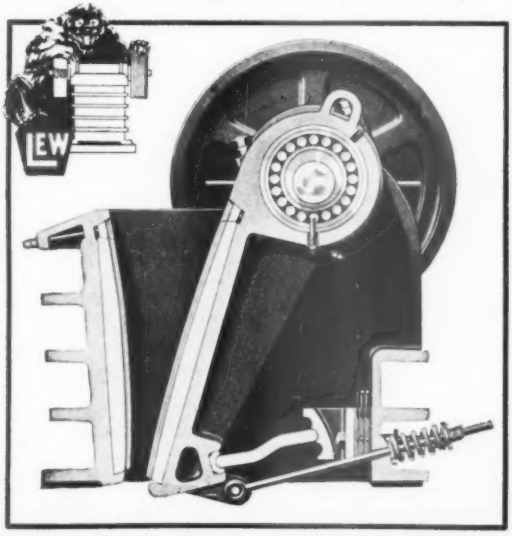
4. Less Fuel Consumption is another Grizzly King economy. On one West Coast job, a Grizzly King not only outproduced but actually used only half the fuel required by either of two crushers built by other manufacturers. All had identical engines.

5. Never a Shaft or Bearing Failure — that's the record of Lippmann Jaw Crushers ever since they were put on the market.

6. Oil Lubricated. Thanks to new improved triple sealing with multiple-groove and labyrinth seals and oil slingers, the Grizzly King is lubricated in the way recommended by bearing manufacturers.

7. Extra Lightweight Strength, possible because of alloy steel construction throughout, means Grizzly Kings are lighter yet stronger. Less weight means easier portability, reduced foundation costs.

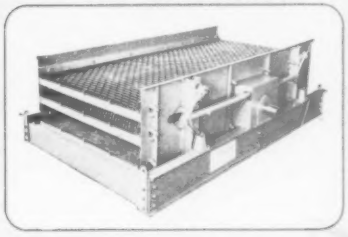
Our new Bulletin 1100 gives complete information on the Lippmann Grizzly King Jaw Crusher. Write for your copy today.



LIPPMANN EQUIPMENT for PITS, MINES and QUARRIES

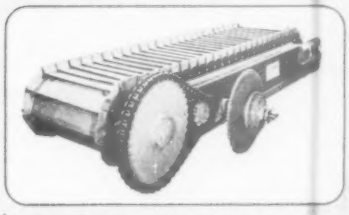
Jaw, Gyratory, Roll Crushers • Pulverizers • Vibrating and Rotary Screens • Loaders and Conveyors • Scrubbers and Washers • Hoppers and Bins • Portable Washing Plants • Self-Propelled Crushing Plants.

OTHER LIPPMANN EQUIPMENT Engineered TO CUT COSTS



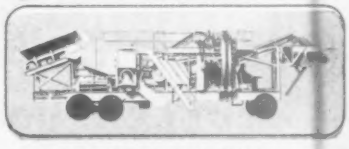
VIBRATING SCREEN

Positive eccentric type has equally distributed vibration for maximum capacity. Vibration contained in screen body entirely. All sizes, single and multi-deck.



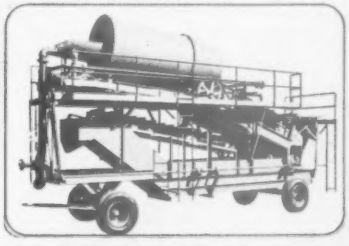
SUPER-DUTY APRON FEEDER

Can handle extremely heavy loads up to 35 feet or even greater lengths. Ruggedly built with cast steel plates. Reciprocating type feeders also available.



SELF-PROPELLED CRUSHING PLANT

Complete aggregate processing plant, including screening and loading, gives greater flexibility of operation. Can be driven and operated by one man.



PORTABLE WASHING PLANT

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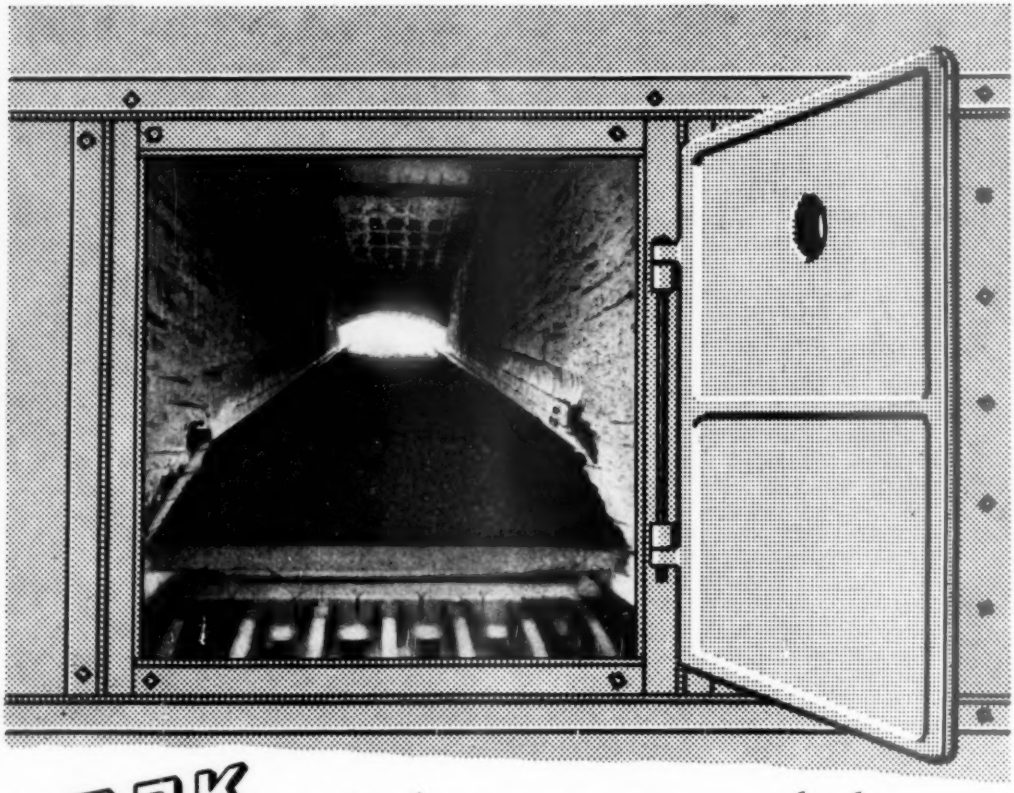

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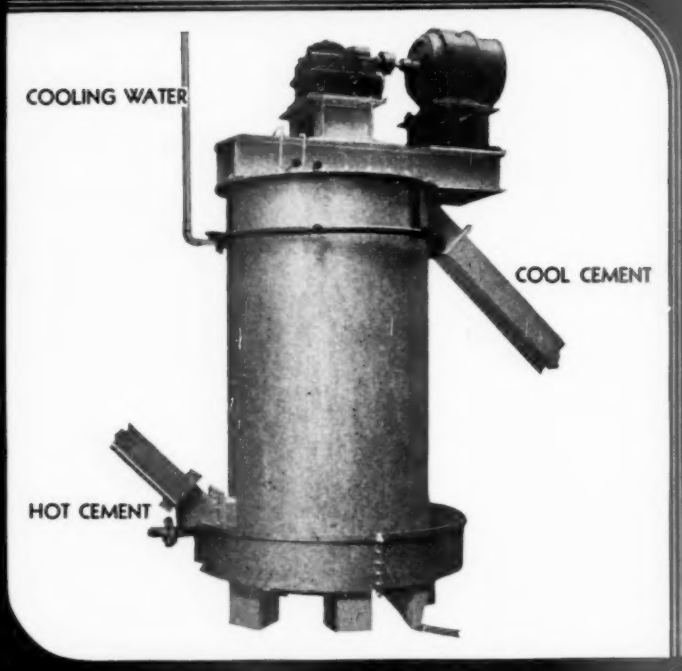
FOR COOLING HOT CEMENT



Cement manufacturers are frequently confronted with the problem of cooling hot cement to temperatures acceptable when making bulk shipments or for immediate packing in paper bags. The FLS Cement Cooler was especially developed for cooling hot cement. • The FLS Cooler consists of a tank, water-cooled externally, the cement being introduced into the bottom and conveyed in a thin layer along the inside of the water-cooled wall to the top, where it is discharged. Thus an intimate contact is established between the cement and the water-cooled surface, assuring high-cooling efficiency. • In addition to cement, the Cooler is applicable to many other similar *dry* pulverized materials.

F. L. SMIDTH & CO.

Designers of Cement Making Factories, Manufacturers of Machinery for Making Cement and Lime, etc.

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"WE HEAR..."

September, 1949

Construction activity in 1949 is expected to reach $19 billion, 1 percent above last year's record-breaking level, according to revised midyear government estimates. A 5 percent decline in private construction to $13.8 billion is expected to be more than offset by a 23 percent rise in public construction. In the private sector of the economy, residential construction will probably decline to $6.5 billion, 10 percent below 1948. In the private non-residential area, the sharpest decline is expected in industrial construction which is expected to fall 28 percent below the 1948 level. Largest increases in public construction are expected in residential, and in school and hospital construction, which may rise 135 percent and 50 percent, respectively, above last year's level.

* * * * * * * * * * *

Steel operations were scheduled at 82.3 percent of capacity in the first week of August. A month ago the rate was 77.8 percent and a year ago it was 94.9 percent.

* * * * * * * * * * *

Almost a million dollars is being allocated to the states through the U.S. Public Health service for study and research on industrial-waste treatment problems. This is being done under Public Law No. 845 passed last June, which provides for federal participation in stream-pollution abatement. Industry and regulatory agencies are thus to receive substantial aid in their river clean-up programs.

* * * * * * * * * * *

Business inventories dipped more than $1 billion between May 31 and June 30, the Commerce Department reports. This is the third straight monthly decline since March 31, with nearly all reductions being in manufacturers' stocks.

* * * * * * * * * * *

Directors of an important group of British cement manufacturers, fearing Government nationalization, have boosted dividends on stocks issued by the companies in the association. Stock exchange prices have eased, owing to the nationalization threat. This follows the action taken recently by several insurance companies, also as a reaction against Government ownership.

* * * * * * * * * * *

Price drops are about over in many lines, according to U.S. News & World Report. Building materials, as a group, are down only 7 percent from their price peak, with only a moderate decline in prospect.

* * * * * * * * * * *

It will take $11.25 billion to bring the nation's 38,000 miles of trunkline highways up to present-day standards, both from the traffic and national defense standpoints, the Public Roads Administration reports, adding that the needed improvements must be undertaken within a maximum period of 20 years. At the 20-year rate, the job would require capital investment averaging $500,000,000 yearly. Presently federal funds are being assigned to projects on the interstate highway system at a rate of about $75,000,000 yearly.

* * * * * * * * * * *

Unemployment, up almost to 4,100,000 in July, isn't likely to move much in either direction in the next few months, according to Business Week. The number of construction jobs will dip seasonally, but will be offset by autumn retirements from the labor force and temporary holiday work in stores.

WE HEAR

A 14½-ton truck loaded with 22,000 lb. of ready-mixed concrete, crashed through a wooden bridge recently near Kansas City, Kan. The driver, who was uninjured, said there was no load limit warning sign on the bridge. According to state laws, owners of trucks carrying heavy loads can be held responsible for any damage done to highways and bridges.

* * * * * * * * * * *

Estimates compiled by 13 Shippers' Advisory Boards indicate a drop of 7.4 percent in freight carloadings in the third quarter of this year from the similar period of 1948. Included among the largest estimated decreases are gravel, sand and stone, 8.9 percent. Truck deliveries have increased on the other hand.

* * * * * * * * * * *

Some manufacturers have worked out an arrangement with their union that non-productive workers can be dropped first regardless of seniority. Such an arrangement is reported to have been very profitable in building up labor productivity.

* * * * * * * * * * *

Serving to emphasize the ever-present need for proper safety measures is the recent cement plant accident in the West that cost the life of one employee. He and several other men had been at work on the plant's air separators and were just leaving their work when the machinery was set in motion before he was free. He was caught in the revolving mechanism, suffering fatal internal injuries.

* * * * * * * * * * *

In England, an abandoned quarry may find itself in use again, this time as a sports arena. If plans materialize, the quarry will be transformed into a hockey ground capable of accommodating 10,000 to 20,000 spectators, bowling greens, tennis courts, putting greens, and a children's playground.

* * * * * * * * * *

A foreman can be discharged legally for disregarding company policy requiring supervisors to remain neutral toward union organizing activities. N.L.R.B. upholds the right of an employer to fire a foreman for failing to follow orders to remain neutral and take no sides in regard to union organization.

* * * * * * * * * *

"Constructive Uses of Atomic Energy" has been published by Harper and Brothers for industrial, insurance and engineer executives desiring information on the potential usefulness of atomic energy in a peacetime economy. Written for the layman in non-technical language, the volume contains discussions by 14 scientists on the everyday usefulness of atomic energy.

* * * * * * * * * * *

Before the year's end there will be about 8000 business failures, Iron Age reports. This compares with 5252 last year and 3476 in 1947. Mining and manufacturing failures accounted for 24.5 percent of the total for the first quarter of this year.

* * * * * * * * * * *

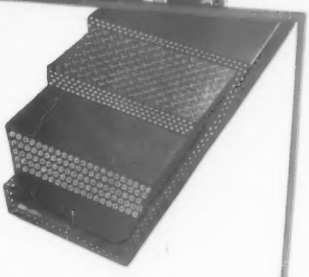
The dollar volume of contracts awarded for building and engineering works in the 37 states east of the Rocky Mountains amounted to $4,467,676,000 in the first half of this year to show a decline of 6 percent from the corresponding period of last year, F. W. Dodge Corp. statistics show. The total was the highest first-half volume on record, excepting only last year.

* * * * * * * * * *

Sometimes employers can refuse to pay employes overtime for the few minutes required to prepare for their regular eight hours of daily work. By refusing to review a case, the Supreme Court leaves in effect a lower-court finding that an employer need not pay his workers for five minutes of preliminary activities before starting work each day.

THE EDITORS

Specify Thermoid



Thermoid Impregnation Process Assures Longer V-Belt Life

Thermoid V-Belts are built to withstand excess moisture—abrasion—acidity—all those elements that hasten belt deterioration. All Thermoid V-Belts are built for the job . . . from the smallest fractional horsepower size up to the largest multiple V-Belt. Each belt is specifically designed and pre-stretched to transmit maximum power without slippage, to absorb repeated shock loads; and to provide smooth, efficient performance at the *lowest* possible cost per hour.

A complete range of sizes are available to meet your requirements.

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It will pay you to *Specify* Thermoid!

Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.

The Thermoid Impregnation Process insures a deeper penetration of rubber between the threads of the yarn, which encases each individual strand with protective rubber. The rubber acts as a sheath between the strands and prevents the destructive abrasive action as the product is flexed in use. To obtain the required rubber penetration, the twist of the yarn must be to exact specifications. With the yarn twisted too tightly, proper penetration of the rubber compound is impossible. This condition produces abrasion, causing premature failure. On the other hand, if the yarn is twisted too loosely, the product lacks tensile strength. Thermoid has discovered the optimum twist of the yarn which assures maximum rubber penetration and greatest strength. The development of Thermoid Impregnation Process is another step forward in Thermoid's planned program of product improvement, assuring maximum service and lower operating costs to industry through the use of Thermoid Industrial Rubber Products.

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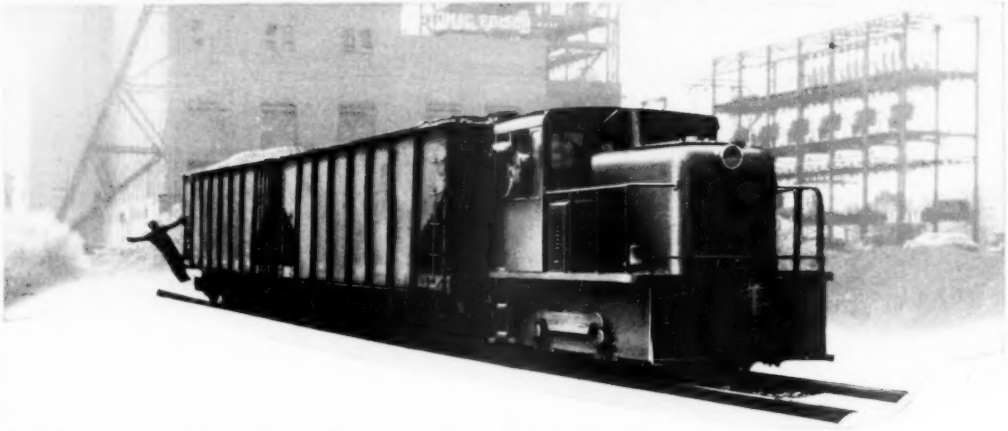

G-E locomotive at eastern plant saves $4288 in one year . . . will pay for itself in less than four years.

"Our G-E 25-ton diesel-electric switcher is saving us $4288 a year; and, it's doing 30 per cent more work in the same amount of time, than the 30-ton steam locomotive it replaced," says the power plant superintendent* of an eastern utility.

Since it arrived on the job in March 1947, the snappy G-E locomotive has had an availability of 99.2 per cent. Working a six-day week, 7½ hours a day, it hauls twelve 50-ton cars of coal at one time.

30.0 Per-cent Investment Return

The $4288 yearly saving is about 30 per cent of the original investment, thus the economical 25-tonner will pay for itself in less than four years. Here are the savings in detail:

Diesel-electric (25-ton)		*Steam (30-ton)*
$397.80	Fuel	$3650.00
121.70	Lube Oil	
41.67	Maintenance	1200.00
$561.17	Total	$4850.00

**Name furnished on request.*

Your Savings Estimated

Over 1500 G-E switchers are saving thousands of dollars in many types of industries. Have your nearest G-E representative show you how diesel-electrics can cut costs in your own plant. Our transportation specialists will survey your switching requirements — estimate your savings in advance. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

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GENERAL ELECTRIC

★ ★ ★ Editor's Page

Are Transportation Charges Reaching Uneconomic Levels For Carriers?

THE FOUR PERCENT freight rate increase granted the railroads on August 11, in order that a forty-hour week might be set up for non-operating employes, brought to fifty-seven percent the increases granted since the war's end. This amounts to three billion dollars a year in added revenue.

It is of interest that the Interstate Commerce Commission, in granting the new increase, warned that higher rates may divert or eliminate some business from the railroads. The Illinois State Commerce Commission, for one, has denied the increase for sand, gravel and crushed stone which may be evidence that the railroads stand to have a drop in revenue.

Railroads are just like any other business in that they have sought the highest rates that the traffic will bear. Now, some of them are finding that they have reached too far and have surpassed the point of profitable returns. Trucking interests have made progress with every increase in railroad rates, and this latest penalty imposed on rail shippers will just about drive home the fact that low cost commodities like aggregates and portland cement have for some time been assessed transportation rates that have been too far out of proportion to the value of these commodities. We refer to revenues accruing to the railroads.

Railroad Requests Reduction

Only recently the Public Service Commission of Binghamton, N. Y., held a hearing on a petition of the D. L. and W. Railroad to reduce freight rates on crushed stone shipped from Jamesville, N. Y., and from near Syracuse. There was opposition to the reduction in rates requested, from a quarry operator who protested that decreased rates would stifle competition, but the railroad contended that it was necessary to reduce rates in order to meet competition from truckers. Furthermore, a witness for the railroad said that if the rate be reduced from $1.45 to $1.15 a ton, the railroad would earn money on crushed stone hauled from the Syracuse area to Binghamton.

Our guess is that crushed stone producers in the Syracuse area did a good job in presenting a case direct to the railroad, showing facts and figures to prove that revenues to the railroad actually were decreasing as freight rates were increased. The same procedure can be successful in many specific instances, and this latest freight increase, where it applies, will make it easier for the alert producer to prove cases where the railroads stand to suffer.

History repeats itself and, in this matter of transportation costs, the rock products industries are just about where they were in 1920 when the railroads had to start yielding ground. Then, as now, railroads were experiencing a decline in revenues and took steps to recapture lost business.

The steady transition to truck hauls for the heavy, low cost commodities of these industries had better be watched closely by railroads if they intend to count on these high tonnage shippers in years to come, when again they must seek business. There is little question that conversions to truck haul are intended to be permanent. Some of the railroads with vision are starting to offer inducements to have some deposits developed along their lines, which is indication that they are seeing the light.

Detriment to Competition

Aside from the point of view of the railroads, freight rate increases in excess of commodity price increases for these industries over the same period of years have raised havoc with marketing practices. What incentive has there been left a producer to accomplish savings in cost of production in order to meet competition, only to have freight rates imposed to wipe out his advantage and then impose disadvantages?

Trade territories have been shrinking as transportation charges have sky-rocketed and new competition has readily started as a result, particularly in the production of readily-procured commodities like sand and gravel. In this respect, that industry for one is distinct and more consideration should have been given to its vulnerability in the imposition of additional freight rates.

Freight rates for portland cement have become so high as to compete in seriousness with the Supreme Court ruling prohibiting freight absorption in marketing. If basing point pricing be permitted again through legal action, distribution will be markedly limited geographically anyhow because freight absorption can be economic for relatively few freight miles at today's rates. The customer poorly located with respect to cement mills will have to pay through the nose even in a buyer's market. And the cement industry is going to have more truck haul customers than ever before.

Freight rates for commodities like cement and aggregates are detrimental to these highly competitive industries, their customers, and the railroads aren't excepted either.

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Rocky's NOTES

Nathan C. Rockwood

The Man Who Developed Big Earthmovers

THE THING that most impressed the layman visitor to last summer's American Roadbuilders' Machinery Exhibit in Chicago was the immense size of some of this equipment, requiring pneumatic tires bigger than the "man on the street" had ever seen. To the initiated who have followed these developments from year to year, as usual in such cases, there appeared nothing out of the ordinary.

All of us who have lived long enough to have seen the advent and development of the automobile, the airplane, the radio and television, if we give the matter a second thought, must realize that the development of earthmoving machinery, in the same length of time, has been no less remarkable, though less generally known.

The man whose name is most frequently and internationally associated with this development is Robert Gilmour Le Tourneau. He is a very unusual man in more respects than one, as the reader of the recently published book "Moving Heaven and Earth*," by Donald F. Ackland, will discover, if he did not already know it. And the title of the book is not merely the common figure of speech, but can be taken literally. For the author, Mr. Ackland, is an English evangelist and missionary, and the subject of his biography is also as well known in church circles as a layman evangelist, as he is in the construction and rock products industries as a designer and builder of earthmoving and related machinery.

A Practicing Christian

In this day when organized group greed appears to have largely replaced individual greed as a dominant factor in society, the life of a very successful business man who both preaches and practices the precepts of Christianity in his manufacturing operations as well as in his other contacts with society, is certainly uniquely interesting and inspiring. Before the various organized pressure groups became dominant factors in our national political and economic life, it seemed that the ultimate solution of our social and industrial problems—the making of a better world—lay in the direction of converting owners and managers of business and industry to everyday practice of at least some of the precepts of the Christian faith, or application of the divine philosophy as taught and lived by Jesus of Nazareth.

No one familiar with our industrial history of the last 100 years can doubt constant progress made in that direction. Now, however, in keeping with the general tendency throughout the world to woo people away from their individual sense of conscience and responsibility, we have the much greater task of converting millions of individuals who comprise these pressure groups. Where before we had to win over relatively few persons of high intelligence and permeable consciences, we now have millions of average intelligence, apparently sometimes with impermeable consciences, easily misled by unscrupulous charlatans.

Although today there are probably scoffers and skeptics of R. G. Le Tourneau's motives in introducing evangelism into the workshops of his large enterprise, we believe that a thoughtful reading of this book may convince many a hard-boiled business executive that perhaps therein is our last hope of bringing peace, goodwill and understanding to our troubled times. We particularly like his apt illustration: "In mechanics our worst enemy is friction. It is what causes all the trouble. I'm a mechanic; All I know is machinery. I live by it, day in, and day out. I like powerful machinery—and I like a powerful gospel. I wish I knew as much about the laws of friction between men as I do about the coefficient of friction of the different materials."

Development of Earthmovers

It is a bit disappointing, but not to be wondered at, that so little of the book describes the work and methods of Mr. LeTourneau, the mechanic and engineer. We wish the author had collaborated more with someone who could have developed this part of the biography.

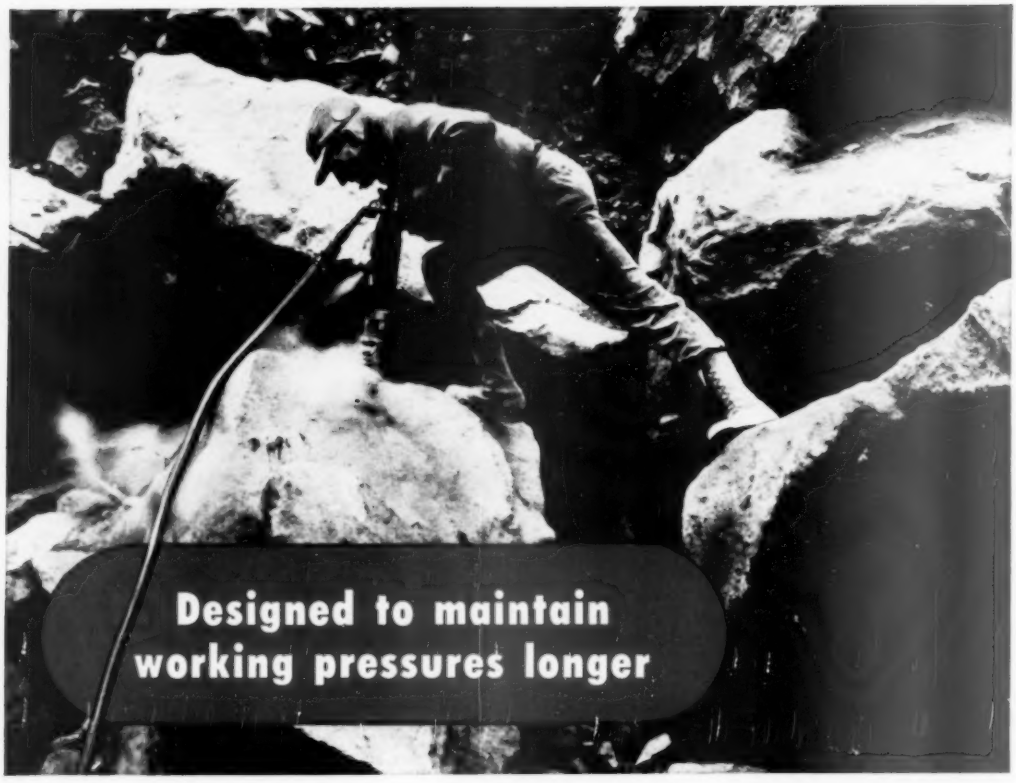
The author gives us an interesting sketch of the usual American boy absorbed in the mechanics of things around him, with no advantages of a formal technical education, starting early in life to build construction contractor equipment largely with his own hands, and with few tools but a welding torch. Mr. LeTourneau is a graduate of that practical school of automobile repair mechanics, said to be the reason why American boys are fitted to meet any emergency of modern civilization.

When Mr. Le Tourneau started his career as a machinery builder in Stockton, Calif., along about 1920, the standard grading or earth-handling tool was the Fresno—a scoop drawn by a team of mules. There followed the wheeled Fresno, and with the advent of the power-driven tractor, these wheeled scoops, and blade scrapers, began to grow in size and capacity. However, there were two units—the tractor and the scraper—and they required two men to operate. Mr. Le Tourneau conceived the idea of one-man operation, by electric motors, controlled by the tractor driver. The next step was to a single piece of equipment, with constantly increasing power, capacity and mobility. That is about all we learn of the development of this type of earthmoving machinery from this book. Mr. Le Tourneau was an earth-moving contractor himself; and the evolution of his machinery, at least in the early stages, was the direct result of his own experience with it.

The following data show the rapidity of this evolution: During 1920-1930, earth moving was done with steam and gasoline tractor units. Using 1000-ft. haul as a base, the average delivery was 8 cu. yd. per man-hour at a cost of 50c per cu. yd. From 1930-33, the increased efficiency resulted in 12 cu. yd. at 45c. In 1933 when pneumatic rubber tires were introduced performance was stepped up to 60 cu. yd. at 14c. The year 1937 saw the invention of the Tournapull which raised capacity to 130 cu. yd. at 8c. At the moment, the biggest and latest unit of that type travels 18 miles per hr. with a load of 40 cu. yd., and can deliver 285 cu. yd. per man-hour at 7c per cu. yd.—incidentally, more than doubling the efficiency of the machine barely took care of the increase in wage rates and other costs in the interval 1937-1949.

To accomplish these results, Mr. Le Tourneau pioneered in the design of many details, including fast reversing electric motors, machine tools for cutting manufacturing costs as well as radical changes in design of the machines themselves. Much of this was done in spite of the advice of technical experts that it could not be done. Doubtless, the same fortitude and self-confidence that led him to go ahead regardless in the design and construction of unprecedented earthmoving machines also caused him to go ahead in his design to convert to Christianity those he came in contact with, in spite of lack of precedent.

*The Iversen-Ford Associates, 175 Fifth Ave., New York 10, N. Y., 1949.



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Hewitt engineers have developed Air Hose which combines special compounds with many new construction features—such as rayon cord—to meet a wide range of severe operating conditions. In fact, Hewitt Air Hose offers you these five advantages:

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3. **Burst-resistant.** Strong carcass of tightly twisted rayon cord, impregnated with rubber, assures utmost strength for continuous hard usage.

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Whether you need hose for supplying air to jumbos, augers, stopers, chipping hammers, jackhammers, rock drills or what-have-you, always insist on Hewitt.

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•

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LABOR RELATIONS TRENDS

Scope of Labor Laws Still Unknown

By NATHAN C. ROCKWOOD

THE ADOPTION of the "overtime-on-overtime" amendment to the federal Fair Labor Standards Act (wage-hour law) eliminates one uncertainty that has been hanging over interpretations of the law, but there are other parts of the Act in just as much need of clarification. The chief of these is the exact coverage of the Act, as well as the coverage of the National Labor Relations Act and its amendment, Labor-Management Relations Act. The coverage of the last two is, or is generally assumed to be, the more comprehensive because they include all employes whose activities "affect" interstate commerce, while the wage-hour law is supposed to apply only to those "engaged in interstate commerce or the production of goods for interstate commerce."

The new amendment to the wage-hour law is short and to the point; it reads as follows:

> Sec. 1 (e) For the purpose of computing overtime compensation payable under this section to an employe—
>
> (1) who is paid for work on Saturdays, Sundays, or holidays, or on the sixth or seventh day of the workweek, at a premium rate not less than one and one-half times the rate established in good faith for like work performed in non-overtime hours on other days, or
>
> (2) who, in pursuance of an applicable employment contract or collective bargaining agreement, is paid for work outside of the hours established in good faith by the contract or agreement as the basic, normal, or regular workday (not exceeding eight hours) or workweek (not exceeding forty hours), at a premium rate not less than one and one-half times the rate established in good faith by the contract or agreement for like work performed during such workday or workweek, the extra compensation provided by such premium rate shall not be deemed part of the regular rate at which the employe is employed and may be credited toward any premium compensation due him under this section for overtime work.
>
> Sec. 2. No employer shall be subject to any liability or punishment under the Fair Labor Standards Act of 1938, as amended (in any action or proceeding commenced prior to or on or after the date of the enactment of this Act), on account of the failure of said employer to pay an employe compensation for any period of overtime work performed prior to the date of enactment of this Act, if the compensation paid prior to such date for such work was at least equal to the compensation which would have been payable for such work had the amendment made by section 1 of this Act been in effect at the time of such payment.

"Prevailing Wage" Laws

An interesting case came up before the Kentucky Court of Appeals involving the rebuilding of a school house. It shows the power of a small group of unionized labor under existing public contract laws modeled after federal law. The circumstances and issue were as follows: A county board of education let a contract to the low bidder for reconstruction of a school building. When the job was about half completed, the work was picketed by labor union representatives who claimed the contractor was not paying "the prevailing wage rates" to some employes, as required by a state law covering the "ascertainment of prevailing rates of wages before advertising for public construction bids." It is one of the state "little" public contract acts, in which a guarantee of the "prevailing" wage rates is supposed to be a part of such a contract.

The union based its charge that the local board of education had not complied with this law, and that the contractor was paying some labor less than the prevailing wage in the nearest city—14 miles distant. The local authorities, in defense, pleaded that the act was unconstitutional in that it delegated legislative authority to private persons, associations, or corporations. The power of the legislature itself to set wage rates was acknowledged. The board of education and the contractor thus sought to establish the validity of their contract. The lower court sustained this point of view.

The Court of Appeals, however, overruled and reversed the lower court by a divided opinion. The majority opinion stated in part: "The statute involved fixes legislative policy. It establishes a standard, which we can not say is unreasonable, to guide the public authorities. The public body is vested with a discretion in determining the reasonable prevailing wage which must be included in the contract. These three factors being present, we find the legislature has not delegated the exercise of its legislative function to private persons or interests.

"The wisdom of this type of legislation may be debatable, but that is not a judicial question. If this statute increases the cost of public works which the taxpayer must pay, if it has an adverse effect upon competitive bidding, or if it aids the labor union movement, these are matters addressed to the judgment of the elected representatives of the people."

The dissenting judge said in part: "I take issue with the majority on the question of whether or not the law involved constitutes a valid delegation of legislative authority to a particular private group within a class. With all due respect to labor unions, it seems to me that the law in question goes entirely too far in requiring public authorities to accept the terms of employment fixed by these organizations without having the right to determine their reasonableness."

* * * *

"The majority are of the opinion that the statute sets up a reasonable standard. I am unable to find such in the statute, unless we may say that any wage rate established by a labor union, regardless of the methods used by it to enforce payment of such wage, is *ipso facto* reasonable. It is to be noted that the public authority must establish the same rate which prevails under union contracts. It may not take into consideration wages paid under non-union contracts. It may not take into consideration the fact that the wage rate was promoted by a powerful union or a weak one, or that the contracts between labor organizations and the employers were negotiated in this county or in New York or Chicago. It seems to me these are matters that should be considered by the public authority if it is to exercise a discretion properly delegated to it by the legislature."

* * * *

"If the federal congress and the state legislatures wish to pass laws within constitutional limits favorable to labor unions, that is a matter of legislative policy which the courts should enforce. The responsibility then rests on the legislative body and its elected representatives. To shift the determination of the public interest to private organizations themselves is for the legislative body to abdicate its power and avoid its responsibility.

"I wish to make it clear that I see no constitutional objection to the legislature fixing, or delegating to a public body, the determination of what prevailing wages shall be paid on public works. The vice I find in the present statute is that it delegates such determination to private industry."

* * * *

We have quoted the dissenting judge at some length because he brings out clearly the trend of both federal and state legislatures, to turn over to pressure groups, the fixing or writing of wage rates, rules, regulations, etc., under which the people are actually being governed. We are constantly getting farther afield from a free, competitive economy in ways the average business man seldom realizes.

Local Quarry Not Under F.L.S.A.

The U. S. District Court, District of New Jersey, in the case of McComb, etc. v. Trimmer et al, decided July 26, 1949, that a local crushed stone operation did not come under the wage-hour law even though it sold much of its product to county highway officials for maintenance of interstate highways. McComb is the administrator of the F.L.S.A. and the defendants were two brothers doing business as the Trimmer Stone Co., Flemington, N. J. The case is similar to others brought by the administrator, and the general interest in this case is in the small size of the operation he considered it desirable to prosecute and in the lapse of time it took him to act.

The administrator charged that: "Defendants since May 26, 1945, have

(Continued on page 86)

ROADSIDE REPORT *by Bert Snooks, owner of the Texas Hauling Company, Houston, Texas, G.V.W. ratings for Ford F-7's and F-8's shown are 19,000 lbs. and 21,500 lbs. respectively.*

"The FORD BIG JOB is more rugged, in my opinion, than any other truck made!"

"I THINK the Ford 145-H.P. BIG JOB is the best all purpose truck on the market," reports Bert Snooks. "I am operating three Ford F-8's and four F-7's with eight-yard bodies. These seven BIG JOBS are doing a better job than fourteen 2-ton trucks with four-yard bodies that I operated in 1947. My Fords have from 15,000 to 100,000 miles and the cost of repairs has been negligible. The Ford BIG JOB is more rugged, in my opinion, than any other truck made."

In terms of *Payload-Performance* the Ford BIG JOBS have no equal in their class. No other truck offers so much payload capacity in relation to chassis weight, with as high a horsepower rating per gross ton. This means bigger payloads within legal load limits. It means faster, more profitable delivery of big loads. Ford's high *Payload-Performance* is evidence of Bonus Built construction. Each of over 150 Ford Truck models is Bonus Built . . . built extra strong to last longer.

ONLY THE FORD BIG JOB HAS ALL THESE FEATURES

- ★ New 145-h.p. Ford V-8 engine for top performance.
- ★ Ford concentric dual-throat carburetor for more power, more economy.
- ★ New heavy duty 5-speed transmissions—overdrive or direct-in-fifth—for operating flexibility.
- ★ Big Ford power-operated hydraulic brakes; front 16-inch by 2¼-inch; rear 15-inch by 5-inch double cylinder on F-7, 16-inch by 5-inch double cylinder on F-8. Air brakes also available for F-8.
- ★ Ford Super Quadrax single speed axles; two-speed axle available in Model F-8.
- ★ Large diameter (10-inch) wheel bolt circle with 8 studs to allow for extra-strong hub construction.
- ★ Million Dollar Cab with Ford Level Action suspension for greater driving comfort.
- ★ Nationwide service from over 6,400 Ford Dealers.
- ★ Ford Bonus Built construction for long truck life.

Gross Vehicle Weight ratings: F-8 up to 21,500 lbs., F-7 up to 19,000 lbs. Gross Combination ratings: F-8 up to 39,000 lbs., F-7 up to 33,000 lbs.

FORD 1949 *Bonus Built* TRUCKS 1949

BUILT STRONGER TO LAST LONGER

USING LATEST REGISTRATION DATA ON 6,106,000 TRUCKS, LIFE INSURANCE EXPERTS PROVE FORD TRUCKS LAST LONGER!

the *Personal Side* of the news

Breen Succeeds Kilbourn

J. M. BREEN, executive vice-president and general manager of Canada Cement Co., Ltd., Montreal, Canada, has been elected president of the company. He succeeds Frederick B. Kilbourn, who died suddenly on May 20. Mr. Breen joined the company in 1922 as technical engineer. He was appointed chief of technical staff in 1934, assistant general manager in 1947, and executive vice-president and general manager in 1948.

J. M. Breen

On Laboratory Staff

JAMES F. SHOOK, JR., has joined the staff of the laboratory of the National Ready Mixed Concrete Association, Washington, D. C. Mr. Shook received his early schooling in Virginia and Maryland. From 1941 to 1943 he worked at the Glenn L. Martin Aircraft Co., where he studied aircraft mechanics at night school. Drafted in 1943, he completed the basic engineering course of the Army Specialized Training Program in 1944 at the University of Alabama, after which he trained with the U. S. Engineers in Louisiana until December, 1945. He served with the army in New Guinea, the Philippines and Japan. After the war he returned to the University of Maryland, graduating in June of this year.

President Resigns

WILLIAM L. KEADY has resigned as president of the U. S. Gypsum Co., Chicago, Ill., ending a career of 25 years of service with the company as purchasing agent, vice-president in charge of operations, and vice-president in charge of sales. He has been president since 1942. A graduate of the U. S. Naval Academy, he joined the marine department of the gypsum company in 1924. Following a directors' meeting, Mr. Keady announced: "I am leaving U. S. Gypsum. Mr. Avery has decided to re-enter the active management of the company."

"Mr. Keady's resignation was not unexpected," Mr. Avery said.

When informed that Mr. Keady had given as his reason for leaving the company the fact that Mr. Avery had decided to re-enter the active management of the Company, Mr. Avery said: "That isn't so. I have been chief executive at U. S. Gypsum since 1905."

Sales Representative

WILLIAM DALE WADLINGTON has been appointed sales representative in the Sacramento Valley territory of Calaveras Cement Co., San Francisco, Calif., with headquarters in Chico, Calif.

McColl Succeeds Wagner

JOHN ROME MCCOLL, formerly sales manager for the Building Products Division of Great Lakes Carbon Corp., New York, N. Y., has been appointed sales manager of Plasticrete Corp., Hamden, Conn. A graduate in civil engineering from the University of Toronto, Mr. McColl has had 20 years' experience in design and construction. He succeeds A. Harry Wagner who has resigned to become president of Superior Building Units, Inc., a new cinder block firm in Richmond, Va.

John Rome McColl

Chief Engineer

THOMAS M. WARE has been appointed chief engineer of International Minerals and Chemical Corp., Chicago, Ill. Formerly industrial engineer on the engineering staff, he succeeds James A. Barr, Sr., who has retired after 38 years of service with the company. However, Mr. Barr will continue to serve in a consulting capacity. Mr. Ware will report directly to the president, Louis Ware. He received his degree in mechanical engineering from Cornell University. Prior to the war he was engaged in armament engineering with the aircraft industry. During the war he was in the U. S. Navy, Office of Naval Research in the Special Devices Division. Prior to joining International Mr. Ware was on the staff of George Fry & Associates, management consulting engineers.

Thomas M. Ware

In Charge of Sales

EDWARD J. HEAD, formerly New York sales manager for Universal Atlas Cement Co., New York, N. Y., has been appointed vice-president in charge of sales for the Metropolitan Sand and Gravel Corp., Port Washington, N. Y. HOWARD E. MARSH has been named vice-president in charge of plant operations.

On Advertising Staff

JOHN A. HASH, a member of the advertising department of The Celotex Corp., Chicago, Ill., since 1944, has been appointed assistant advertising manager.

Receives Award

CHARLES S. WHITNEY, representing the firm of Ammann & Whitney, consulting engineers, New York, N. Y., and Milwaukee, Wis., recently received the first annual award of the Concrete Reinforcing Steel Institute for the company's paper entitled "Thin Shell Concrete Structures." Members of the selection committee were Prof. Frank E. Richart of the Talbot Laboratory, University of Illinois, representing the American Society of Civil Engineers; Henry C. Turner, Jr., president of Turner Construction Co., representing the Associated General Contractors of America, and Chester L. Post, consulting engineer of the Public Buildings Administration, representing the American Concrete Institute. Mr. Post, chairman of A.C.I. Committee 318, was appointed to fill the vacancy left by the death of A. J. Boase of the Portland Cement Association.

New Managers

HARRY E. LEWIS has been appointed manager of the product engineering department of the building products division of Great Lakes Carbon Corp., New York, N. Y. The main products of the division are Permalite and mineral wool insulation. ROBERT L. CORNISH has been named advertising and sales promotion manager of the division. He was previously in the sales promotion department of Johns-Manville and prior to that was in the general publicity department of Union Carbide and Carbon Corp. ROBERT C. HUGHES has been made sales manager of the rock wool section of the building products division. He was formerly president of Hughes Insulation, Inc., Fairhaven, Vt., and prior to that was sales manager of the U. S. Mineral Wool Co. They will make their headquarters in New York.

Elected President

GEORGE E. WARREN, vice-president and manager of the Osborn, Ohio, plant of Southwestern Portland Cement Co., Los Angeles, Calif., has been elected president of the company to succeed the late Frank H. Powell who died July 6. ERNEST V. APT, sales manager and traffic manager at Osborn, has been made manager of the plant, and RODNEY G. KAUFFMAN has been promoted to sales manager.

Heads Perlite Institute

T. C. CARTER, vice-president of Great Lakes Carbon Corp., New York, N. Y., has been elected president of the Perlite Institute, New York, N. Y., a national trade association representing 18 manufacturers of perlite. Mr. Carter has been directly connected with building products for the past 30 years. He was one of the organizers of the National Mineral Wool Association in 1934, serving three times as president and organized the Industrial Mineral Wool Institute in 1941. Other directors of the organization are J. DON ALEXANDER, president of the Alexite Division of Alexander Film Co., Colorado Springs, Colo., who was named vice-president; OLIVER N. GREGG, president of Gregg Lumber Co., Grand Rapids, Mich., and C. H. HALL, president of Standard Perlite Corp., Pasadena, Calif. WHARTON CLAY, a former secretary and engineer of the National Mineral Wool Association, was made executive secretary. He will have charge of detailed operations and direction of research.

Wharton Clay

Broadcast Tour of Cement Company

A TRANSCRIBED TOUR of the Marquette Cement Manufacturing Co. plant at Oglesby, Ill., was broadcast recently over a local radio station. The broadcast featured on-the-job interviews with plant superintendent, Ralph Moyle; quarry superintendent, William Spurr; chemical engineer, Chester Butler, and chief kiln burner, Garfield Peters. Richard Moyle, Sr., Marquette vice-president in charge of operations, was heard comparing present day operations with the crude manner in which the first portland cement made in Illinois was produced over 50 years ago. University of Illinois Radio Service technicians earlier in the year spent two days at the plant transcribing the story of how cement is made.

Association Officer

WALTER N. LAWSON, assistant treasurer of Medusa Portland Cement Co., Cleveland, Ohio, has been elected first vice-president of the Cleveland Association of Credit Men.

Safety Director

MELVIN H. BAKER, president of the National Gypsum Co., Buffalo, N. Y., has been elected to the board of directors of the Safety Council of Western New York.

Sales Representative

WILLIAM G. JEFFREY has been transferred from Chico, Calif., to Modesto, Calif., as sales representative for Calavaras Cement Co., San Francisco.

Board of Directors of the Perlite Institute, left to right, are: Oliver N. Gregg, J. Don Alexander, T. C. Carter, and C. H. Hall

Named General Manager

GORDON TONGUE, formerly vice-president and division manager of the Pacific Coast Cement Co., Seattle, Wash., has been appointed vice-president and general manager of the Northwestern Portland Cement Co. Mr. Tongue has been associated with the cement industry for many years, starting with Superior Portland Cement, Inc., in 1913. He left that firm in 1946 to take a position in Los Angeles, returning to Seattle in 1947 to become vice-president of the Pacific Coast Cement Co., and when the Seattle plant was leased to Permanente Cement Co. he remained as division manager of operations.

Perfect Cement Salesman

LEROY F. CHRISTMAN, district sales manager of the Allentown Portland Cement Co., Catasauqua, Penn., has composed a parody of Rudyard Kipling's "If," for presentation at the company's annual sales meeting, which we believe will be of interest to our readers:

THE PERFECT CEMENT SALESMAN

If you can please the bosses there above you,
Anticipate their wishes ere they're spoken,
If you can make the clients nearly love you
Although your well meant promises are broken,
If you can hobnob as an equal with a plutocrat
As though you also had a million in three banks,
If you can buy a sandwich in an automat
And have a timid little guy say "thanks,"
If you know more about his business than a builder
And show him many profit-making tricks,
If you can tell quaint stories to a dealer
Give concrete facts of help to Ready Mix,
If you get good machinery for a block plant
Increase production using your cement,
If you predict the cost of excavation
And rock comes out as you say to the cent,
If you can be a goose bone weather prophet
Foretell what days are good for laying slab,
If you can hear the secrets of a lifetime
And keep them in your heart and never "blab,"
If you can walk a tightrope in a circus
Among your friends competing with each other,
If you befriend a guy you'd like to murder
And, smiling, shake his hand as with a brother,
If you can grow skin as tough as cowhide
And take a verbal lashing with a grin,
If you can give all answers to all questions
And ask some questions too, that get you in,
If you can meet a drunkard or a preacher
And be at home with either any day,
If you can work all day and then the night turn
And write reports when you'd prefer to play,
If you can plug and plug and keep on plugging
And never doubt that always you will win,
Then you're such stuff as bosses' dreams are made of—
A dream of a perfect man—
The Portland Cement Salesman.

—L. F. CHRISTMAN.

OBITUARIES

CHARLES HOSMER MORSE III, vice-president in charge of manufacturing of Fairbanks, Morse & Co., Chicago, Ill., and eldest son of Colonel Robert H. Morse, president of the company, was killed in a plane crash near Roanoke, Ill., July 9, 1949. Mr. Morse had been connected with the company since 1919, starting at the Beloit plant and subsequently becoming assistant general manager. After World War I he rejoined the organization and worked in the factories at Three Rivers, Mich.; Indianapolis, Ind.; and St. Johnsbury, Vt. He left Beloit in 1939 to become president of Inland Utilities Co., a subsidiary. In 1946 he was elected vice-president in charge of manufacturing, with headquarters in Chicago.

ALFRED JAMIESON MILLER, chairman of the board of Whitehead Brothers Co., New York, N. Y., and one of the founders of the National Industrial Sand Association, died August 8 at his home in Newport, R. I., after an illness of several months. He was 72 years old. Mr. Miller started his business career with the company in 1904, succeeding his father as New England manager with headquarters at Providence, R. I. He later became vice-president and treasurer. In 1924 he was elected president and served in that capacity for 24 years, becoming chairman of the board in 1948.

J. D. BERG, chief executive officer and a director of Dravo Corp., Pittsburgh, Penn., died suddenly on June 29 at his home in Chatham, Cape Cod, Mass. He was 66 years old. Mr. Berg had been head of the corporation since the death of its founders, F. R. Dravo and R. M. Dravo, in 1934. He served as board chairman from 1934 to 1946, at which time he was elected chief executive officer. He became identified with Dravo-Doyle Co., now a subsidiary, as sales engineer in 1906, becoming vice-president in 1908 and president in 1923. He was also a director of the company.

EDWARD J. BURNELL, vice-president, general sales manager and director of Link-Belt Co., Chicago, Ill., died July 22 at his home in Winnetka, Ill. He was 61 years of age and had been in ill health for several months. Mr. Burnell was a director of the American Mining Congress, Foundry Equipment Manufacturers Association, and the Conveyor Equipment Manufacturers Association. During the war he served on the advisory boards of the Machinery Branch of the War Production Board and the Chemical Corps of the War Department, and as consultant to the Reconstruction Finance Corp.

C. C. MERRILL, vice-president and general manager of the Southwestern Portland Cement Co., Los Angeles, Calif., died recently at his home in Beverly Hills, following a long illness. He was 74 years old. His death occurred within a month of the death of Frank H. Powell, president of the company. Born in Alton, Ill., Mr. Merrill went to Los Angeles in 1893. He became associated with Carl Leonhardt who was then in the contracting business and later founded the cement company, and became vice-president of the firm in 1907.

RUSSELL G. GREEVES, technical director of Kelley Island Lime and Transport Co., Cleveland, Ohio, died July 21 while on a business trip to Washington, D. C. He was 52 years old. He was a graduate of Syracuse University, and for a number of years was on the staff of the United States Bureau of Standards. He joined the research department of Kelley Island in 1922, and had been technical director for several years. Mr. Greeves was a member of Committee C-7 on Lime, American Society for Testing Materials, and for many years had been active in the development and manufacture of lime and lime products.

JAMES M. DAVIDSON, superintendent of the Buffalo, N. Y., plant of Farrel-Birmingham Co., Inc., Ansonia, Conn., died suddenly on July 15 following a brief illness. Mr. Davidson spent his entire business career with the company, starting as office boy in 1920. He was appointed plant superintendent in 1946.

EARLE B. CONKLIN, treasurer of the Albany Sand and Supply Co., Albany, N. Y., passed away July 16 at the age of 64. He had been treasurer for 39 years.

ANDREW M. HARNWELL, secretary-treasurer and a director of Consolidated Sand and Gravel, Toronto, Canada, died suddenly at the age of 82.

W. H. MCDOWELL, for many years division sales manager in Kansas City for the Universal Atlas Cement Co., Chicago, Ill., died July 12 at the age of 65. He retired last September after 40 years of active service with the company. Mr. McDowell was born in Clearfield, Penn., and graduated as a mining engineer from Pennsylvania State College.

WILLIAM M. METZLER, consulting superintendent of the mechanical goods division of Goodyear Tire and Rubber Co., Akron, Ohio, passed away July 23. He was 89 years old and had completed 63 full years of service in the rubber industry.

WALTER MARSHALL ARMSTRONG, retired president of the Standard Sand and Gravel Co., Wheeling, W. Va., died July 5. He was 80 years old and had been retired for the past 21 years. Mr. Armstrong formerly operated the Armstrong Sand Co.

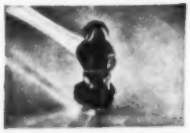
ERNEST EDWARD GLENN, vice-president and treasurer of Tobin Quarries, Inc., Kansas City, Mo., died June 19. He was 38 years old and had been in ill health for several years.

CARTER EDWARD BIEWER, vice-president of the Western Sand and Gravel Co., Spring Valley, Ill., died July 15 from injuries sustained June 20 when the auto he was driving went out of control and overturned.

GEORGE T. ELLIOTT, who had been engaged in the concrete block business before his retirement about a year ago, died May 10 at his home in Mattoon, Ill.

STOP LOOK LESSEN

maintenance costs



HIT IT! *Marfak* won't splatter like ordinary grease — proof that heavy loads and rough roads won't hammer it out of spring shackles, tie rods and other chassis parts . . . that *Marfak* gives safer, longer-lasting protection with fewer applications.

TEXACO MARFAK assures longer life for all chassis parts

Texaco Marfak is the longer-lasting chassis lubricant that *stays on the job.* Heavy loads and rough service won't squeeze or jar it out of bearings. *Texaco Marfak* seals against abrasive dirt, keeps rust-forming moisture off metal. Parts last longer, maintenance costs less.

In wheel bearings, use *Texaco Marfak Heavy Duty.* It provides fluid lubrication inside the bearing, but retains its original consistency at the edges . . . sealing itself in, sealing out dirt and moisture. Protects against rust, too. No seasonal change is required.

For crawler track mechanisms, use *Texaco Track Roll Lubricant.* It assures longer life for all parts, and lower maintenance costs.

Let a Texaco Lubrication Engineer explain the Texaco Simplified Lubrication Plan, and show you how it can reduce costs all around. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

MORE THAN 300 MILLION POUNDS OF MARFAK HAVE BEEN SOLD!

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INDUSTRY News

Rockwell Lime Company Buys Allwood Properties

ROCKWELL LIME CO., Chicago, Ill., on July 15 purchased the quarry, property and manufacturing facilities of Allwood Lime Co., adjoining Rockwell's lime plant and quarry near Manitowoc, Wis. Both plants are in operation under the management of Rockwell Lime Co., which is headed by Michael Brisch, Jr., president.

Papers filed in the office of the register of deeds indicate the Allwood property transfer involving approximately 55 acres was made at a cost of $45,000.

The Rockwell plant was founded in 1906 by the late Michael Brisch, Sr. The Allwood company was organized in 1913. Consolidation of the two plants gives the Rockwell company approximately 80 acres.

Michael Brisch, Jr., has announced that it is planned to move most of the Allwood plant and equipment to an enlarged Rockwell plant. Associated with him in the company are four brothers, Thomas, secretary; Carl, treasurer, and John and Joseph, directors.

Retiring officers of the Allwood company are William Tills, president, and Atty. Charles E. Brady, secretary and treasurer. The Rockwell company produces chemical lime and construction material. The Allwood company has been engaged in the manufacture of polishing lime, neutralizing, and also a milk of magnesia lime.

Expands Shipping Facilities

MARQUETTE CEMENT MANUFACTURING CO., Chicago, Ill., has awarded a contract to S & W Construction Co., Memphis, Tenn., for the construction of a new dock and related facilities to replace existing installations at the firm's shipping plant on the Wolf River in Memphis. Cost will be in excess of $50,000 and the work is scheduled to be completed this year.

In addition to the new dock, the contract calls for construction of dolphins, bridge and transformer foundations and replacement of a pipeline, dust collectors and other miscellaneous fixtures which facilitate the pumping of cement between barges at the dock and the silo storage plant 100 yd. away.

Cooper Supply Co., Detroit, Mich., has added this sixth Mack LJT tractor to its fleet. Hauling about 26 cu. yd. of gravel or other aggregates for a total gross weight of 104,000 to 117,000 lb., the unit works on a round-the-clock, six days a week schedule, making 64-mile round trips, 60 miles of which are over paved roads and 4 on improved gravel

Open Gravel Plant to Serve Dam Project

CONSTRUCTION of a gravel crushing and washing plant near Greene, N. D., which eventually will furnish 856,000 tons of aggregate for use in construction of Garrison dam, has been completed and began deliveries last month according to Frank H. Googins, superintendent for the J. L. Shiley Co., St. Paul, Minn., firm which has the contract for manufacturing and shipping the aggregate.

The plant includes a field hopper to which four Euclid trucks deliver gravel from the pit, approximately 1½ miles long by 1200 ft. in width. From the hopper, the aggregate is delivered by belt conveyor to the crushing plant. A conveyor system under the stockpiles transfers the materials to storage tanks located on a 3½-mile railroad spur on the Soo Line railway.

Supervisory personnel, in addition to Mr. Googins, includes K. A. Curtis, assistant superintendent, and J. J. O'Hara, office manager.

Nullify Overtime on Overtime Decision

PRESIDENT TRUMAN signed into law on July 20 the Senate amended version of H.R. 858, the overtime-on-overtime bill. This amendment to the Wage and Hour Law is officially designated as Public Law 177. The confusion arising out of the U. S. Supreme Court's decision in the Bay Ridge case in June, 1948, is now corrected by legislative action. Premiums of not less than time and one-half the employe's straight-time hourly rate for work performed on certain days of the week as such may now be treated as true overtime and need not be included in computing the employe's "regular rate" for purposes of overtime computation.

Lone Star to Move Offices

LONE STAR CEMENT CORP. has leased for a long term of years the entire fifteenth floor, containing 21,400 sq. ft. of usable area, in a new 26-story office building being constructed at 100 Park Avenue, New York, N. Y. The firm has occupied its present headquarters in the Canadian Pacific Building, 342 Madison Avenue, since erection of the structure in 1921. The new building is scheduled to be completed by February, 1950.

Find Uranium in Limestone Quarry

CHARLES BUSSEN, operator of a limestone quarry near Ste. Genevieve, Mo., recently came across radioactive rock and shale in his quarry. The kind of mineral and extent of the deposit are unknown, but the rock undoubtedly contains some uranium compound, according to Dr. Edward L. Clark, state geologist. Mr. Bussen was puzzled by a yellow streak of metal in a chunk of gray Spergen limestone, and sent a sample to Dr. Clark who found the radioactivity in a routine check of the sample. On visiting the quarry, Dr. Clark discovered there were deposits of soft black shale embedded in the limestone which also were radioactive. Further investigation will be conducted by the Atomic Energy Commission which has a standing offer of a $10,000 bonus for the first commercially-valuable discovery of a new uranium deposit. Therefore, it should be worthwhile for all quarry operators to keep a check on the material contained in their respective quarries.

Lightning Explodes Dynamite at Quarry

DYNAMITE set up for blasting was exploded by lightning in a recent storm at the Anderson and Oxendale rock quarry, near Bern, Kan. Louis Hurla, foreman, and his crew of eight men quit working when it began to storm in the afternoon and went to their shack. A short time later there was a series of bolts of lightning, one of which struck in the quarry and discharged the dynamite that had been set for the next day's work. Fifty-two holes had been drilled and set and were to be fired by electricity. They were not wired in series, but the lightning discharged all of the sets. As rocks came hurtling down from the blast, one, weighing about 50 lb., went through the roof of the shack where the men were sheltered, landing at the workers' feet. All equipment had been taken out of the quarry with the exception of a wagon drill, which was damaged extensively, and three cases of dynamite, which remained intact.

Lime Company Changes Management

CHUBBUCK LIME CO., one of the oldest lime companies in California, has been purchased by Arthur B. Lathrop, Donald P. Dalzell, Leo T. McMahon and Carl J. Eskeline, all of Santa Barbara. The company has a large plant on the desert at Chubbuck, Calif., where it owns two limestone deposits, and by a by-products plant and main office in Los Angeles. Mr. Lathrop is the new president and director of the company, Mr. McMahon is secretary-treasurer and general counsel, and Mr. Eskeline is vice president and general manager. Charles I. Chubbuck, former president of the company, will remain with the firm, serving as chairman of research and by-product development.

Extends Gravel Properties

THE AMERICAN AGGREGATES CORP., Greenville, Ohio, has announced purchase of gravel holdings in Dayton of the Price Brothers company. The Price gravel holdings consist of approximately 100 acres of land along the Great Miami river in Dayton.

Resume Cement Production in China

LIAONING CEMENT CO. in Northeastern China has taken over several plants that had much of their equipment dismantled by the Russians. Two of these plants, at Penki and Hsiao Tsun, have resumed production with a maximum capacity of 300,000 tons annually, *Mineral Trade Notes* reports. However, due to a coal shortage and transportation difficulties, it was predicted that only 50,000 tons would be produced in 1948.

Coming Conventions

Week of September 25, 1949—

American Institute of Mining and Metallurgical Engineers, Mid-Year Meeting, Ohio State University, Columbus, Ohio.

October 10-14, 1949—

American Society for Testing Materials, 1st National West Coast Meeting, Fairmont Hotel, San Francisco, Calif.

October 20-21, 1949—

California Associated Concrete Pipe Manufacturers, Fall Meeting, Santa Barbara, Calif.

October 20-22, 1949—

National Lime Association Operating Division Meeting, Hotel Commodore Perry, Toledo, Ohio.

October 24-28, 1949—

37th National Safety Congress and Exposition, Chicago, Ill.

November 2-4, 1949—

Southeastern Concrete Pipe Association, Fall Meeting, Montgomery, Ala.

November 29-30, 1949—

National Slag Association, Annual Meeting, Netherland-Plaza Hotel, Cincinnati, Ohio.

January 17-19, 1950—

National Agricultural Limestone Association, Fifth Annual Convention, Hotel Statler, Washington, D. C.

Week of January 22, 1950—

National Sand and Gravel Association, 34th Annual Convention and Exhibit, Stevens Hotel, Chicago, Ill.

Week of January 22, 1950—

National Ready Mixed Concrete Association, 20th Annual Convention and Exhibit, Stevens Hotel, Chicago, Ill.

Week of January 29, 1950—

National Crushed Stone Association, 33rd Annual Convention and Exhibit, Stevens Hotel, Chicago, Ill.

January 31—February 2, 1950—

Agricultural Limestone Institute, 5th Annual Convention, Stevens Hotel, Chicago, Ill.

February 23-25, 1950—

American Concrete Pipe Association, 42nd Annual Convention, Fairmont Hotel, San Francisco, Cal.

N.L.A. Operating Division Meeting

THE OPERATING DIVISION of the National Lime Association will meet October 20-22 at the Hotel Commodore Perry, Toledo, Ohio. Fred Witmer, Sr., chairman of the Operating Division, and Arthur C. Hewitt, program chairman, are in charge of the program which will feature one whole day being set aside for visiting Toledo lime plants. Included in the visit will be The Kelley Island Lime and Supply Co. postwar, large capacity, gas-fired vertical kiln plant; The Ohio Hydrate & Supply Co. plants; National Mortar & Supply Co., and National Gypsum Co.

Two round-table discussion periods have been scheduled, one covering overall lime production, and the other pertaining solely to quality control. The first will take into consideration, quarrying, crushing, washing, screening, calcining, cooling, preheating, drying, hydrating, storage, packing, shipping, dust collection, maintenance, safety and personnel. Under quality control, the topics instruments, instrument maintenance, methods of sampling, continuous sampling, chemical and physical analysis, laboratory control of process, and records will be discussed.

Protest Truck Load Limit

OFFICIALS OF THE Buffalo Slag Co., Buffalo Gravel Corp., and the Concrete Delivery Co., Inc., Buffalo, N. Y., have protested to the Common Council of Lackawanna, N. Y., against the new ordinance prohibiting the operation on Ridge Road, in that city, of trucks exceeding 15 tons, maximum gross weight.

Herbert E. Rainer, secretary of the Buffalo Slag Co., said the ordinance is "unreasonable and discriminatory," adding that the Council should have patterned the ordinance after the state law governing truck loads on highways.

Pavement Yardage

AWARDS of concrete pavement for the month of July and for the first seven months of 1949 have been announced by the Portland Cement Association as follows:

	Square Yards Awarded During July, 1949	During First Seven Months, 1949
Roads	2,950,191	16,073,880
Streets and Alleys	1,989,548	10,605,272
Airports	95,388	1,398,714
Totals	5,035,127	28,077,866

Germ-Killing Cement

NORTH AMERICAN CEMENT CORP., New York, N. Y., after several years of experimentation, has developed a bacteria-killing cement at its Security plant. The new cement, which is now being marketed, can be used like any portland cement, and has a germ-killing ingredient said to be effective against bacteria and fungus growth found in dairy barns, restaurant kitchens, gymnasiums and similar places. It is applied as an outer layer, about ½ in. thick, to concrete floors and walls. Tests on sample panels from this cement show that they harbor from 54 to 96 percent less bacteria than adjacent panels of ordinary concrete, even after a lapse of six years. Bacteria-killing qualities are said to increase with age.

Industrial and Mineral Industries Conference

THE 1949 OKLAHOMA Industrial and Mineral Industries Conference will be held September 30-October 1 at the University of Oklahoma, Norman, and will be sponsored by the Geological Survey and the University.

Highlights of the meeting will include an opening luncheon, a half-day technical session, banquet and entertainment, business meeting, tour of the University, barbecue at the Geological Survey's research laboratory, and the O. U.-Texas A. and M. football game.

Speakers will discuss further manufacturing possibilities from Oklahoma minerals, factors affecting the location of industries, favorable factors in Oklahoma, unfavorable factors in Oklahoma and their remedies.

Inspect Dam Project

NEW YORK STATE CRUSHED STONE ASSOCIATION recently conducted a field inspection trip of Mt. Morris Dam on the Genesee River, Mt. Morris, N. Y. New York State officials, engineers, contractors and association members were in attendance, and also visited the General Crushed Stone Co. plant which is supplying aggregate for the project. Harry E. Battin, Jr., is president of the crushed stone association; H. W. Barnes is vice president; H. E. Rainer is treasurer, and Harry R. Hayes is director, W. V. Greeley is project manager at the dam.

State Cement Plant

REPRESENTATIVE Ed R. Hanford, Almance county, N. C., chairman of the state portland cement study commission, authorized by the 1949 general assembly, recently conferred with Governor Scott of North Carolina on plans for constructing a state cement plant. Hanford believed the state highway commission could utilize its own funds to build the plant, a report states.

To Open Quarry

KASER CONSTRUCTION CO., West Des Moines, Iowa, has announced plans to open a rock quarry near Red Oak, Iowa.

Anti-Climax to Basing Point Decision

EIGHTY cement companies have asked dismissal of federal anti-trust proceedings in the U. S. district court at Denver, Colo. The defendants claimed that the offenses charged by the government already had been prohibited by the federal trade commission order prohibiting basing point selling, and a circuit court decree. They contended that the government must prove they have violated the injunction by persisting in conspiratorial practices after the order became effective last July. The government contends that the burden of proof rests with the defendants to show that they have complied with the decree.

In the present action Peter J. Donoghue, chief of the mountain states office of the anti-trust division, said, the government is seeking further sanctions against the individual companies. Most of the charges stem from an alleged conspiracy to use the multiple basing point system to control the cost of cement.

Frank Brick of New York, representing 57 companies and the Cement Institute, argued that all of the offenses charged by the government in the present instance were restrained under the previous rulings and that "prima facie, all the alleged offenses have been terminated."

Motions for dismissal on those grounds were filed by the Cement Institute, the Northwestern Portland Cement Co., and the Superior Portland Cement Co. The California Portland Cement Co. asked dismissal of the suit against it on the grounds that it had "ceased to be a member of the Cement Institute in January 1941," seven years before the cease and desist order became effective.

Forty-two building supply dealers in the Cleveland, Ohio, area recently were charged with using a market price list to arrive at conforming price and sales policies in the area since 1944. The government wants the alleged price-fixing device, an irregularly published price list, to be banned. Spokesmen for the dealers denied using the list to agree on prices, discounts and other sales conditions.

Called "The Buyers' Guide on Building Materials," the lists are published and distributed by Harry DuBroy of Cleveland who denies that there has been any collusion on his part with any of the defendants or other building suppliers. He describes the Guide as a market price list of building materials which is available to anyone who might be interested, and likened the lists to stock market quotations carried in newspapers. No one is obligated to base prices on the lists. At the time of this writing the accused dealers had not stated whether they would fight the government's attempt to obtain the decree.

HINTS and HELPS

PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN

Continuous Sampling

AT THE NEW masonry cement plant of Pennsylvania-Dixie Cement Corp., Bath, Penn., limestone is ground in a Raymond mill and, together with high

Cement sample is delivered through tube, left. Motor drives exhaust fan on mill

gypsum cement, is re-ground in an Allis-Chalmers 7- x 22-ft. tube mill. The discharges from both mills are sampled separately and continuously by a small screw geared down to turn very slowly. The screw, which is about 2 in. in dia., passes through the materials at the discharge points. This continuous sampling aids in obtaining a uniform product. In the illustration, the 5-gal. can, left, receives one of the samples from the vertical pipe. The 60-hp. G.E. motor drives the exhaust fan on the Raymond mill.

Compressed Air Supply System at Quarry

AN EASTERN crushed stone operation employs two stationary compressor units—an I.R. 12 x 14, Type ER-1 and a Gardner-Denver—as well as an I.R. 315 c.f.m. portable unit. The stationary compressors are mounted near the crushing plant and the air line serving the receiver runs up over the rim of the quarry, but well back from the face. The receiver location is possibly some 600-700 ft. from the compressor and 100 ft. back from the face.

Along this airline outlets are provided for hose connections that in turn connect with wagon drills used for vertical blast holes. The air hose also can be dropped down over the quarry face to supply the same type of drills being used for toe and breast holes. By placing the air receiver close to the point of use, air is received at higher pressure than it would be if the receiver was located close to the compressor. This might be an important advantage where the margin between air consumed and air available is a close one.

End Loader with Dozer

OFTEN INDUSTRY MEN ask if rubber-mounted equipment, sufficiently small and mobile enough to be used on rough terrain, can have enough power to also work a dozer blade. All of these qualifications seem to be met at the John T. Dyer trap rock quarry, near Birdsboro, Penn., where a Hough end-loader

Rubber-mounted end loader with dozer assists in road maintenance

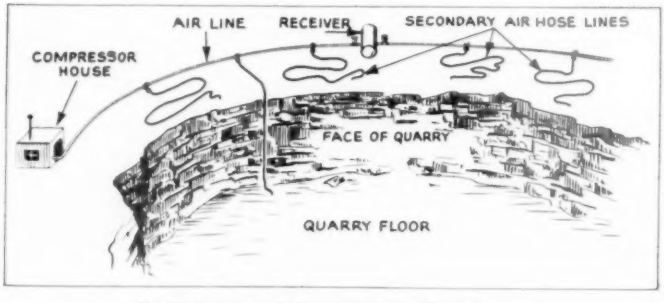
has been equipped with a dozer blade and is working on the rim of the quarry. Strippings from a Case and a Koehring Dumptor have been dumped there for use in widening turns on the road to the rim and for other road building purposes.

Grizzly Ahead of Crusher

AT A GOVERNMENT DAM being built in the South by the U. S. Corps of Engineers, the grizzly shown in the illustration is being used ahead of the

Apron feeder delivers stone to grizzly ahead of primary crusher

primary crusher. At the top of the picture the end of a 48-in. x 15-ft. Telsmith apron feeder can be seen, and at the extreme bottom can be seen the upper tip of the corrugated jaws of the 40- x 42-in. Farrel Bacon jaw crusher. Fines passing the grizzly, and crushed material, fall to a small hopper below and are delivered by a Jeffrey vibrating feeder to the first conveyor belt in the plant. Provisions are being made so that minus material passing the grizzly, if of inferior quality, can be by-passed. Currently the installation is handling 300 t.p.h. when the crusher is set to deliver an 8-in. product.



Sketch of compressed air supply system at Eastern quarry

Reinforced Truck Body

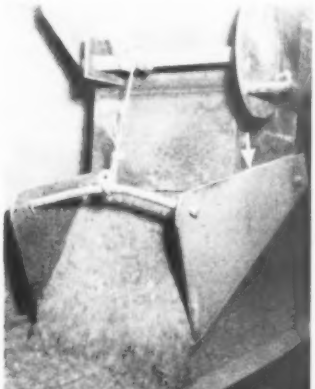
AT CLARK'S HILL DAM, being built north of Augusta, Ga., on the Savannah River, a new quarry has been opened to supply granite aggregate,

Welded strips reinforce truck body

including granite sand, for the concrete being used. Haulage is by a fleet of Euclid rear dump trucks, and, as shown in the illustration, maintenance costs on the body section are cut by wear-taking strips of flat metal that have been welded to the inside bottom of the body.

Reclaiming Gate

AT A NEW sand and gravel plant in California, which is supplying a large tonnage of material to the Los Angeles-Wilmington-Long Beach harbor areas, one of the finer sizes of rock is being ground stored with a reclaiming tunnel below. Gates being used are set by a hand wheel. An arrow

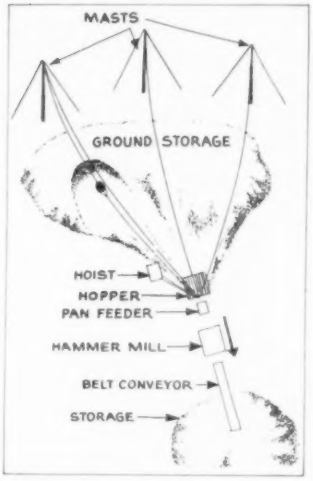


Reclaiming gate stops feeding when belt stops

painted on the side of the feeder shows the operator the proper place to set the gate. As the belt handles only one size, the gate setting is not changed very often. Flow of material stops when the belt stops, or when the supply of rock from above is exhausted. Several of these gates are in use at the same time.

Scraper With Three Masts

AT A CRUSHING OPERATION where it was desired to deliver to the plant a rock blended to a certain specification, the material was hauled in the immediate vicinity of the plant by trucks and stockpiled in the usual manner. For reclaiming, a 1-cu. yd. Westeco slackline, powered by a 3-drum, 50-hp. Ingersoll-Rand hoist, was used. However, instead of one single mast, three separate steel masts were employed. These were erected around the outer



Scraper system using three masts for reclaiming material from stockpile

edge of the stockpile in such a manner that any one mast could be used conveniently, and reclaiming from the stockpile progressed at the same time that it was being built up by the truck deliveries.

Replaceable Bucket Lip

THE YUBA DREDGES that operate in the gold fields of California have established many precedents in the economic handling of gravel. During the past years some three billion cu. yd. of material have been dredged by these units. The Tisco buckets shown in the illustration each hold 18 cu. ft. of material. The lips of these buckets, a patented feature, are of manganese steel and were supplied by the American Manganese Steel Co. They are

Bucket lips are bolted on for easy replacement

bolted onto the bucket by two bolts with the ends of the crescent-shaped lip designed so that they hook into the main bucket casting. To replace one of these wearing lips requires only a few minutes. Formerly the lips were riveted on with a series of large rivets and replacement was a time-consuming operation.

Improved Conveyor

CONCRETE PRODUCTS MANUFACTURERS in small communities sometimes cannot afford to install elaborate equipment for handling aggregate as the larger plants do. Shown herewith is an example of homemade equipment such as is used by a small producer in Florida who built his own conveyor to handle small amounts of aggregate including expanded slag. The trough-shaped, conveyor idlers are composed of a simple cast bearing and supporting frame of wood. The belt is 18 in. wide and approximately 65 ft. long.

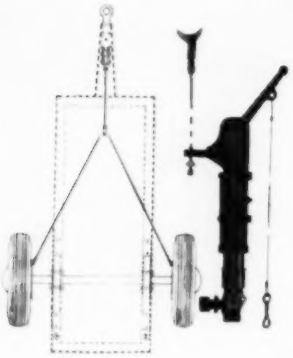
Homemade belt conveyor with wooden idlers

New Machinery

ROCK PRODUCTS

Surge-Control Device

UNITED MANUFACTURING CO., Bedford, Ohio, has made available a new self-contained, hydraulically-operated "Titanic" surge-control device, de-



Details of surge-control device

signed for use with 11- 12- and 14-in. mechnical brakes on all types of two and four-wheel trailers, such as those designed to transport concrete mixers, having capacities up to 5 tons. When the towing vehicle slows or stops, a hydraulic cylinder in the surge-control unit simultaneously and automatically applies an equal braking action to the trailer, bringing it to a smooth stop and eliminating "over-ride" action, the company states.

Expands Shovel and Crane Line

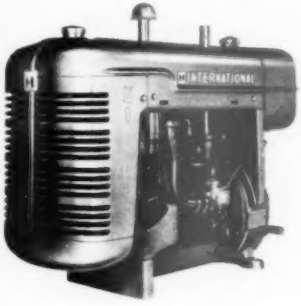
LIMA SHOVEL AND CRANE DIVISION, Lima-Hamilton Corp., Lima, Ohio, has added three new rubber-tired machines, Types 34-T, 34-M and 604-M, to its line of shovels and cranes. The Type 34-T is mounted on a truck chassis with independent power (two engines, one in the rotating assembly, which powers all shovel and crane operations, and one in the truck, which is used for propelling the carrier). Standard equipment includes a 5-speed main transmission and 2-speed auxiliary transmission which facilitates 10 speeds forward and 2 reverse. The adaptor casting, which includes the machined roller paths and internal swing gear, is welded to the truck frame. Upon this casting is mounted the rotating assembly which includes the basic features of the Type 34 Paymaster, but with alterations to facilitate adaption to truck mounting, the manufacturer states.

Type 34-M differs from Type 34-T in that it is a self-propelled unit with one engine mounted in the rotating assembly supplying the power for all operations including propelling in either direction. Power for propelling is transmitted from the standard reversing clutches in the rotating assembly through a special train of gears and the vertical propel shaft to the wheeled mounting. A 2-speed transmission is standard, but a 4-speed transmission is available if desired. All wheels are equipped wth air operated service brakes, and steering is accomplished hydraulically. Both the 34-T and 34-M can be equipped for shovel, crane, clamshell, dragline or pull-shovel operation.

The Type 604-M rotating assembly incorporates the basic features of the Type 604, but with alterations to facilitate adaption to truck mounting. Like the Type 34-M, one engine, mounted in the rotating assembly, supplies the power for all operations including propelling. Rigid type outriggers are standard equipment. The carrier is equipped with oscillating tandem type rear axles, to provide extra flexibility when working on uneven terrain. The machine is especially adapted to materials handling work requiring lifting capacity up to 35 tons.

Gasoline Engine

INTERNATIONAL HARVESTER CO., Chicago, Ill., has announced a 4-cylinder gasoline engine for a wide range of "Cub-horsepower" applications. The



Sixteen-hp. gasoline engine

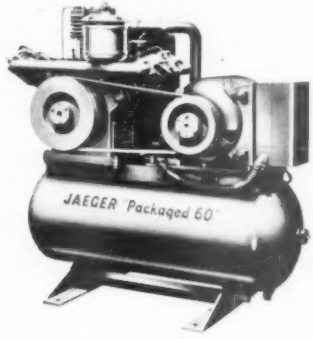
new unit, Model U-1, is available as a stripped engine or with job-engineered attachments up to a complete power unit and can be equipped to operate either on gasoline or natural gas.

Stripped, the U-1 delivers a maximum of 16.3 brake horsepower at 2500 r.p.m. It develops a maximum of 16 working horsepower equipped with fan, radiator and air cleaner.

Type 604-M on wheel mounting, equipped with 45-ft. boom, crane rigged

Stationary Compressor

JAEGER MACHINE CO., Columbus, Ohio, has announced the "Packaged 60" stationary compressor, a complete and ready-to-operate, heavy-duty, 60-

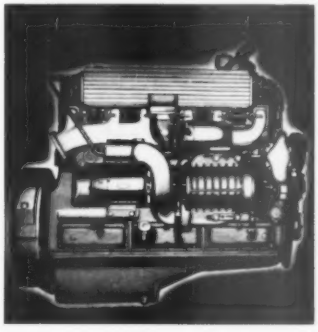


Ready-to-operate 60-c.f.m. compressor

c.f.m. unit. It consists of 2-stage, v-belt-driven air-cooled compressor and 15-hp. electric motor, mounted on an 8.5 cu. ft. air receiver with base, and all electrical controls. The compressor also features two low-pressure and one high-pressure cylinders arranged in "W" form; is air-cooled; and has force-feed lubrication, scientifically finned cylinders, large air passages, oversize valves, across-the-line starter and dual controls.

Adds to Diesel Line

CUMMINS ENGINE CO., INC., Columbus, Ind., has announced production of a new supercharged diesel engine for industrial applications. Designated as Model HRBIS-600, the new unit develops 225 hp. at 1800 r.p.m. It has a $5\frac{1}{8}$-in. bore and a 6-in. stroke with piston displacement of 743 cu. in., and employs the four-stroke cycle principle of operation, and the Cummins fuel distribution and injection system.

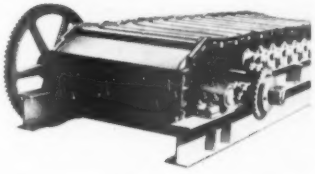


Model HRBIS-600 diesel engine

Other mechanical features listed by the manufacturer include standard two-valve heads, continuous groove main bearings, increased flow lubricating system, buttress-type oil pan and flywheel housing, a newly-designed lubricating oil cooler and a Roots type blower. In addition to the industrial model, an automotive engine, Model HRBS-600 has been placed in production. The company also has made available a new series of lightweight parts said to make engine weight reductions of from $6\frac{1}{2}$ to 8 percent possible.

Apron Feeder

NEW HOLLAND MANUFACTURING CO., Mountville, Penn., is manufacturing a Model 50 Apron Feeder with 28-ton hopper capacity. The company describes the new unit as being designed for any breaker requiring a feeder which can handle up to 50-in. material. It weighs 39,475 lb., including a standard steel hopper made

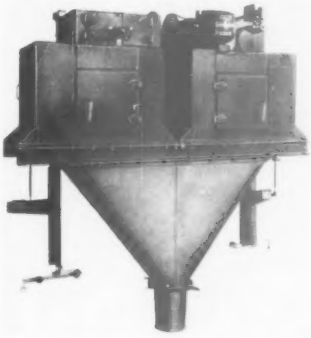


Apron feeder with 28-ton hopper capacity

of 1-in. plate. The feeder is 50 in. wide with 14-ft., 6-in. centers. Manganese steel pans are 50 in. wide and have a 9 in. pitch. Head sprocket and tail wheel are made of 12-in. P.D. carbon steel. The sprocket has renewable manganese teeth and the tail wheel has renewable manganese pads. Rollers are manganese and drive gear and pinion have cast teeth. The main frame is 18 ft., 6 in. long.

All-Electric Bagger

RICHARDSON SCALE CO., Clifton, N. Y., has started production of an all-electric automatic duplex bagging scale which accommodates gravity or power feed arrangements for bagging materials normally put up in open-mouth paper or textile bags. The Model E-50 Duplex comprises two scales with a common bagging spout and has a normal range from 5 to 25 lb. and from 25 to 50 lb. It is said to be capable of handling twenty-four 10-lb. bags and eighteen 25-lb. bags per min., speeds varying with the type of material, method of feeding and size of unit weighing. Slip-on spouts are supplied for changing bag sizes as required. The bagging machine is



All-electric automatic duplex bagging scale

totally enclosed to provide dustproof operation and all electrical construction is explosion-proof, conforming to requirements of the National Electric Code and National Board of Fire Underwriters. The unit can be used independently or as part of a coordinated packing system.

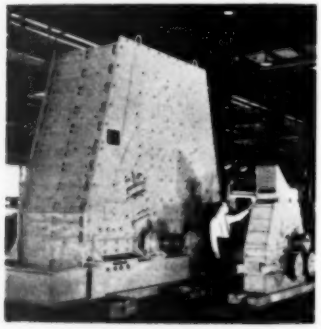
Adds to Tire Line

THE GOODYEAR TIRE & RUBBER CO., Akron, Ohio, has added the Hard Rock Rib to its truck tire line, company officials have announced. The tire, designed especially for front wheel service in heavy construction, excavation and strip mining, is expected to help elminate hard steering and vibration encountered in these types of operations. Tread design consists of three, heavy circumferential ribs, with the shoulder pattern resembling that of the company's standard Hard Rock Lug tire. The new tire currently is being manufactured in three sizes, including 12.00-24, 13.00-24 and 14.00-24.

Heavy duty tire

Impact Breaker

NEW HOLLAND MANUFACTURING CO., Mountville, Penn., is producing a double impeller impact breaker for secondary crushing and small gravel in-



Midget impact breaker for secondary crushing shown with what is designated as the world's largest impact breaker

stallations. It is said to be the smallest breaker of its kind ever to be produced. Using the principle of breaking stone by impact in suspension, the Model 1212 will handle material passing a 12-in. sq. opening, and will produce aggregate as fine as minus 1 in. in a recirculating system. The Model 1212 differs from other New Holland impact breakers in that it uses rotor rolls in the two impellers, instead of four-cornered impeller bars, to provide even-wearing breaking surfaces since the rolls automatically rotate when the breaker is in action. Bearings are self-aligning, heavy duty anti-friction type, and either flat belt or V-belt drive can be used.

Portable Crushing Plants

PIONEER ENGINEERING WORKS, Minneapolis, Minn., has added two new portable crushing plants to its line of other equipment. The primary plant includes a jaw crusher and the secondary plant incorporates a three-roll crusher.

The first, designated No. 153 PR, has an overhead eccentric jaw crusher with feed controlled by a 42-in. by 14-ft. 3-chain apron feeder. A 30-in. belt on 25 ft. centers delivers finished material over the front of the plant for truck loading. The unit is mounted on a 3-axle chassis equipped with twelve 12.00 x 20 pneumatic tires.

No. 4309, the secondary crusher plant, incorporates a triple roll crusher with feed hopper and a 30-in. belt on 20 ft. centers for finished material delivery. This unit has an equilizer between the two rear axles and is equipped with 10.00 x 20 tires. Brakes can be furnished with mechanical, vacuum or air control. The front bolster is removable, allowing for semi-trailer hitch. According to the manufacturer, a feature of the triple roll crusher is the positive gear driver using chromemolybdenum star gears which provide proper tooth contact for any adjustment of the rolls. Roll wheels are cast manganese steel. A 110 to 125 hp. engine is required for this plant; and without a power unit, weight of the plant is approximately 40,000 lbs.

Rubber-Center Coupling

MORSE CHAIN CO., Detroit, Mich., has announced the "Mighty Midget," an all-rubber-center coupling designed for improved power transmission in fractional horsepower motors. The Neoprene center member is said to give the coupling a service life as much as ten times longer than ordinary couplings in its particular power range. Flexing caused by misalignment is absorbed by the entire center member rather than by sloppy fit of pins, designers claim. Tight fit of the coupling pins, when pressed into the rubber center member, is said to eliminate noise and vibration, and shock loads are cushioned for longer bearing life and lower replacement costs.

Blasting with Portable Plant

KOHLER CO., Kohler, Wis., announces successful use of its truck-mounted electric generating plant 3M21 as a source of power for detonating quarry blasts. It is claimed that a large number of blast holes may be fired at one time from this unit, which requires a small amount of gasoline per hr. of operating time.

First of General Motors Corp. heavy-duty model "H" truck to roll off the assembly line at the company's truck plant, Pontiac, Mich. This HC-522 is one of 61 basic models of what is claimed to be the most complete range of all-new, all-improved heavy duty trucks ever to be introduced at one time

Long Vibratory Conveyor

SYNTRON CO., Homer City, Penn., has made available long vibratory conveyors in various lengths and capacities for suspension or base mounting. The units are powered by one or more Syntron vibratory motors mounted either above or below the trough. There are no belts, idlers or variable speed motors to maintain as the movement of the trough is confined entirely to the spring system of the vibratory motor. A dial switch provides variable control of the rate

Detonating a quarry blast at Ellins Construction Co., Weston, Ontario

of material flow. The unit illustrated is a heavy tonnage suspension type conveyor with an open flat pan trough, 20-ft. long, and is one of four units making up a combined length of 80 ft. for supplying ore to retorts. The trough is equipped with gates above each retort, for charging as desired.

Motor Grader

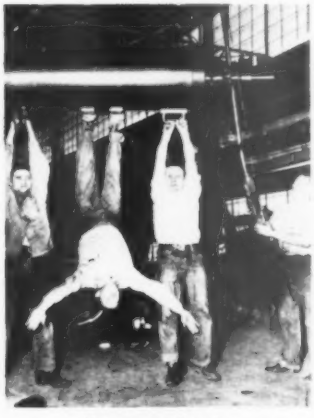
ALLIS-CHALMERS MANUFACTURING CO., Tractor Division, Milwaukee, Wis., has announced the 34.7-hp. Model "D" motor grader, an 8500-lb. machine in the low-priced grader field, featuring tandem rear-wheel drive, tubular frame design, and rear-mounted engine-transmission construction for improved visibility.

The tandem drive rear wheels are said to afford more driving power, permitting the unit to handle larger loads. The tubular frame is designed to absorb shocks and stresses and assure maximum visibility.

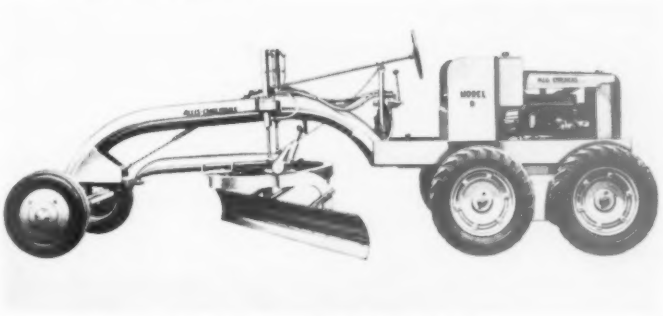
Other features listed by the manufacturer are a "Roll-Away" moldboard for rolling dirt away from the blade instead of packing it down; an extensive blade range; hydraulic lift, side shift, and seven pitch positions to facilitate handling, and four working speeds from 2.40 to 18.61 m.p.h. forward, and 2.87 m.p.h. reverse.

Magnetic Pulley

DINGS MAGNETIC SEPARATOR CO., Milwaukee, Wis., has designed and constructed what is believed to be the world's largest magnetic pulley employing alnico, an aluminum, nickel, cobalt, iron alloy of permanent magnetic stability. The pulley is 24 in. in diameter and 60 in. wide, weighs 2200 lb., and includes 1500 lb. alnico. It will be used to remove iron impurities from sand used in the manufacture of glass at the Hancock, W. Va., plant of Pennsylvania Glass Sand Corp. A permanent magnet, the Alnico casting is magnetized by heavy currents of short duration reaching peaks in the vicinity of 100,000 amperes. After complete magnetization, the pulley is ready for operation with no subsequent loss of magnetism.



Alnico magnetic pulley



Motor grader with tandem rear-wheel drive

Self-Contained Car Shaker

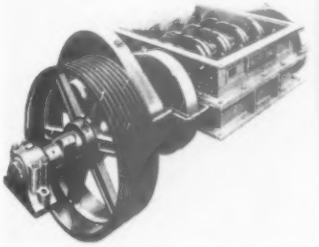
LINK-BELT CO., Chicago, Ill., recently announced an addition to its line of car unloaders, a self-contained vibrator unit. Advantages derived from use of the new car shaker, according to the manufacturer, are: cars need not be uncoupled while the shaker is in operation, allowing movement of cars through the unloading zone as a complete train; the shaker pivots on the car top, on shoes which act as guides to maintain the position of the unit on the car.

One of the principal features of this shaker is its low frequency of vibration, resulting in relatively quiet operation and imparting no more damage to the car than its rolling along the average road bed. Rate of unloading varies with material in the car, car design, temperature, plus many other variables, but normally, one to three min. will unload the average car. The new shaker weighs 8500 lb., complete with a 20-hp. motor wound for 3 phase, 60 cycles, 220 or 440 alternating current.

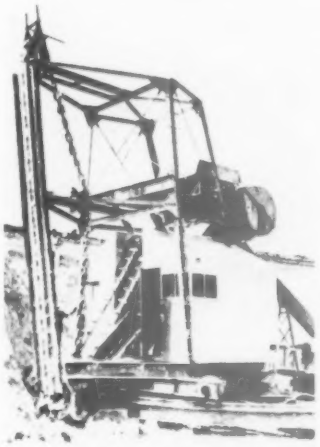
Redesigns Crusher and Shale Planer

EAGLE IRON WORKS, Des Moines, Iowa, has redesigned its double roll preliminary crusher and its shale planer, according to an announcement from the company. The crusher has 50 percent stronger shafts, larger cutter bearing areas for longer life, a simplified frame to reduce cutter changing time, and self-aligning bearings to withstand extreme abuse under heavy crushing or shaft deflection. The bearings have improved dust seals for positive protection and reduced maintenance, the announcement states. In addition, a positive acting shear pin clutch is said to protect the entire unit against damage. The basic principles of a combined hammermill, operating at comparatively slow speed, and cutter, and crusher have been retained.

The shale planer has been mounted on crawlers so that it can move about a pit under its own power. By manipulating electrical controls in the cab, the planer can be advanced into a bank, reversed and turned to start a new length of cut, or it can be moved to a new location in the pit.



Redesigned double roll crusher



Crawler mounted shale planer

Final screening station, foreground, contains two 4- x 12-ft., double-deck screens. Sand plant can be seen in background. Stacking belts finger out over a reclaiming tunnel

Producing Aggregates For Buggs Island Dam Project

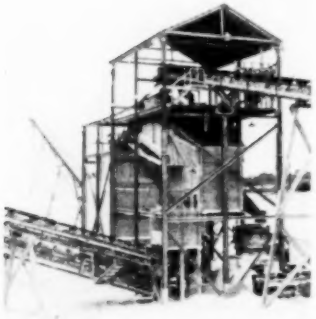
Sand ground from granite rock selected for its non-reactive properties. Rod mill to pulverize sand is closed-circuited with rake classifier. De-waterer designed to deliver sand of low water content direct to belt conveyor

By WALTER B. LENHART

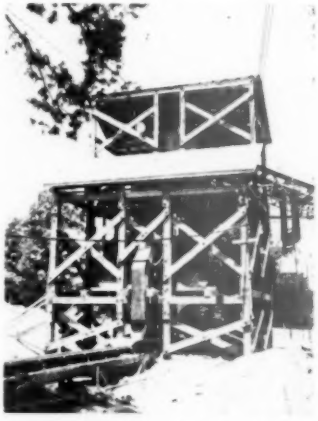
IN VISITING the many dams throughout the United States being built under direction of United States Corps of Engineers, many crushed stone operations have been observed as well as a great volume of concrete being poured in all sections of North America. It has been noted throughout the years that as each new dam is being constructed every new development in concrete technology, or new developments in the processing of crushed stone, or the processing of a manufactured sand, are being taken advantage of by the Corps of Engineers so that a better and more lasting concrete structure results. No detail in the preparation of the various aggregates is too insignificant to be overlooked. If a departure from what others consider "Standard Practice," often a term used to cover "Outmoded Practice," is needed at a U. S. Corps of Engineers construction job so as to insure the people of a lasting and a safe dam structure, the Corps is not reluctant about stepping forward to set a pattern that may at times sound controversial, but which in the final analysis is done for better construction techniques.

No one must infer that a construction job is an experiment. On the contrary it is the result of experience. The Engineers Corps has a background of years of construction experience that is amplified and kept up-to-date by one of the most advanced and scientific construction research organizations in the country. The testing laboratories of the U. S. Corps of Engineers for the Eastern portion of the United States are located at Marietta, Ga., and this laboratory has drawn to it men from all walks of engineering and scientific life, most of whom had previously made outstanding names for themselves in civilian work as concrete, chemical geologist, petrographers, physicists and similar scientific technicians. They spare no pains to thoroughly check the findings of others, and of their own, before incorporating them in any public structure.

One of the most recent construction dams that we have visited is located in Virginia on the Roanoke



Closeup of final screening station (station No. 2). Note 4-ft. gyrosphere crusher, lower right

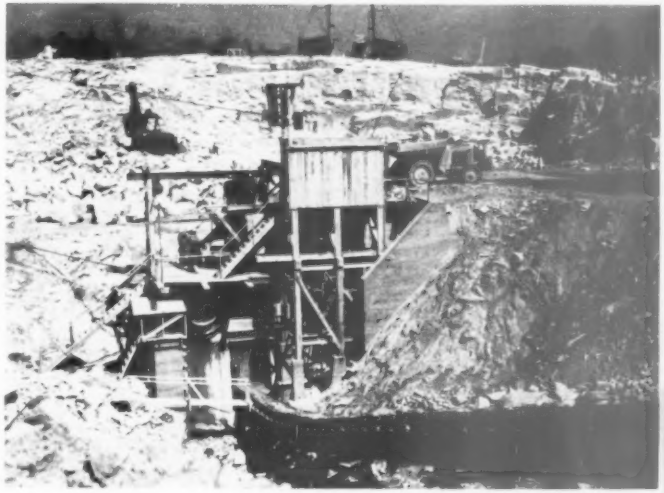


Two wet (or dry) double-deck, 5- x 10-ft. vibrating screens are housed in this structure for re-screening at the dam site to remove chips from breakage due to previous handling of the stone

river at Bugg's Island, the island after which the dam is named. It is located south of Richmond and almost on the Virginia-North Carolina line, and illustrates what we have just stated.

Concrete technologists have known for years that large masses of monolithic concrete develop heat on setting and this heat should be dissipated in some manner or another. The engineers at Bugg's Island are keeping the concrete temperatures low by using ice and ice water at the mixer. This however, is not a new practice; but in addition, the coarse aggregates are put into four, tall steel silos and large volumes of ice water allowed to flow up, through and over the crushed stone until the aggregate is thoroughly chilled. The towers are 11 ft. in dia. and 18 ft. high. The flow of ice water is from 35 to 40 minutes and the resulting temperature of the aggregate is kept in the 52 to 60 deg. F. range. Yet, to get a more perfect concrete, one must go back to another well known fact, and that is that the moisture content of an aggregate should be known and be kept at a constant figure, for otherwise it would be difficult to make concrete with a constant slump and w/c ratio. So the engineers take this chilled aggregate, and in a matter of minutes before using it, pass the aggregate over v i b r a t i n g "de-hydrating screens." There, numerous jets of high pressure air impinge against the cascading particles and remove excess water from them. Located near this section of the processing plants are two compressors that supply air for this work, as well as for other uses about the project. There is available an Earl E. Knox Co. 3000-c.f.m. unit and an Ingersoll-Rand compressor rated at 3500 c.f.m.

All water for the concrete and domestic use is treated in a Permutit Zeolite water softener. Three Flak-ice machines, each capable of turning out 16.35 tons of flaked ice per day, are



At the beginning of quarry operations, two churn drills in background did almost all of the drilling but now are used only when on a high face. Wagon drills, extreme right, accomplish most of the drilling at present. In foreground is the 40- x 42-in. jaw crusher with a quarry haulage unit to its right and a power shovel, left

available, and two 4-cu. yd. Koehring mixers set face to face for mixing with automatic C. S. Johnson batching equipment and controls are employed.

Another phase of the operation that could be used to illustrate our opening theme relates to the Engineer Corps holding that the sand used in concrete should not have any of the so-called "reactive aggregates." To insure this program the engineers use a granite coarse aggregate and prepare a granite sand from it and use these in the dam structure. The granite sand is "manufactured" by combining minus No. 4 materials with the required amount of minus $\frac{3}{4}$-in., plus 4-mesh materials ground to minus 4-mesh in an 8- x 12-ft. peripheral discharge Marcy rod mill that was supplied by the Mine and Smelter Supply Co. Working in conjunction with the rod mill is a Dorr Co. bowl and duplex rake classifier.

At most operations the Marcy rod mill is used in open circuit with the classifier or de-waterer that usually follows it. Then if any un-ground or larger particles of rock go through the rod mill without being reduced in size, these large particles could possibly get into the sand. Generally, if reasonably sized rock gets into a rod mill the cascading rods effectively reduce it in size long before it reaches the discharge point. However, at Bugg's Island, to

Left: Overhead stockpiler for sand and coarse aggregate can be seen in background with two of four cooling tanks for aggregate in view at left of illustration. Bypass conveyor, left foreground, is used when aggregate is not cooled, or for sand. Cooled aggregate is delivered to structure in lower background for rescreening to remove stone broken from handling, and is then conveyed to mixing plant by conveyor, right foreground. Right: All aggregates are re-stockpiled near the dam site with overhead stockpiler shown. A reclaiming tunnel is located below

Four tanks for cooling coarse aggregate. Flat conveyor in foreground by-passes these tanks when cooling is not necessary

make sure that no material coarser than No. 4 mesh gets into the sand, the rod mill, from its discharge openings near the center line of the periphery, discharges to a 6-in. Wilfley pump. The pump elevates the ground pulp to a screen ahead of the rod mill. The oversize from this screen goes back to the rod mill, and the minus No. 4 mesh throughs go to the 16-ft. bowl of the Dorrco classifier.

Mixing sand in a 4-cu. yd. concrete mixer with 6-in. cobbles, as is practiced at the mixing plant, naturally produces some grinding action on the finer sizes, so at the outset of operations here an F.M. of around 3.0 is used with the intent of re-grinding in the mixer which will reduce the F.M. to specification requirements, namely 2.3 to 2.8. At the time of inspection rather large scale plans were afoot to actually determine the amount of degradation of the sand when mixed under these conditions.

The aggregate for Bugg's Island dam is being supplied by Ralph E. Mills & Gorman Brothers with offices near the quarry. R. W. McCall is project manager for the aggregate contractors.

A new granite quarry has been opened up about three miles from the dam construction site. This new plant features a large surge pile following the primary crusher with the surge pile receiving a minus 8-in. material. It holds 16,000 tons total and 4000 tons live capacity. A second surge pile is located ahead of the sand manufacturing section. There are five finished aggregate storage piles at the crushed stone plant, each holding roughly 4000 tons of material. Near the dam a second group of five aggregate storage piles are provided for. These are larger and can accommodate 18,000 tons of the cobbles (minus 6 in., plus 3 in.); 16,000 tons of minus 3 in., plus 1½ in.; 15,000 tons of minus 1½ in., plus ¾ in.; 14,000 tons of minus ¾ in., plus 4 mesh; and 40,000 tons of sand. At the plant, all but the sand is processed dry. However, having two sand storage piles with intermediate haulage of three miles means that a wet sand has ample opportunity and time to properly drain itself down to a constant water content so that no elaborate re-handling, or processing to reduce the water content, is necessary.

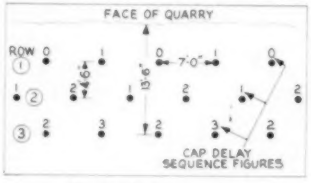


Fig. 1: Blasting sequence

At the crushed stone plant the coarse sizes of aggregate fall from 18-in. stacker belts over a reclaiming tunnel without the use of stone ladders. However, at the dam site stone ladders are provided for in the stockpile there so as to reduce chipping to a minimum. However, all stone withdrawn from the latter stockpile must pass over re-screening units. For this purpose there are two Tyler double-deck, 6- x 10-ft. vibrating screens that can operate either wet or dry. If the stone is washed here it is "dehydrated" as previously mentioned. At this point the minus 4-mesh chips are removed and the top deck is simply a wear-taker. Sand by-passes this re-screening section.

Quarry Operations

The quarry is situated immediately alongside the plant. Little stripping is necessary. Primary drilling is done by a battery of 7 Cleveland wagon drills as only a 24-ft. lift is used. Loading is done to a fleet of five Koehring 5-cu. yd. dumptors by a 54-B, Bucyrus-Erie shovel with a 2½-cu. yd. bucket, and a 801 Koehring that has a 2-cu. yd. bucket. Both are diesels.

The wagon drills drill three rows of holes that have a total burden of 13 ft., 6 in. Each row of holes may be spaced from 4 to 6 ft. within this burden set-up. The holes are 7 ft. center to center. They are loaded with 75 percent Atlas explosives in the bottom and 60 percent for a top charge. The holes are shot with Rockmaster delay electric caps. Fig. 1 shows the sequence. It will here be observed that in the front row of holes the O-delays

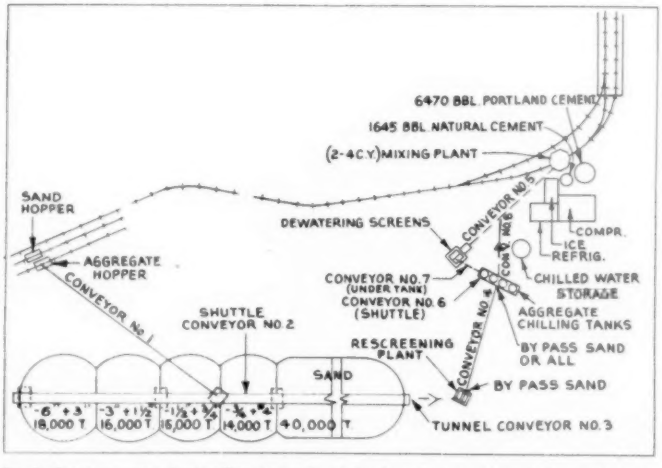
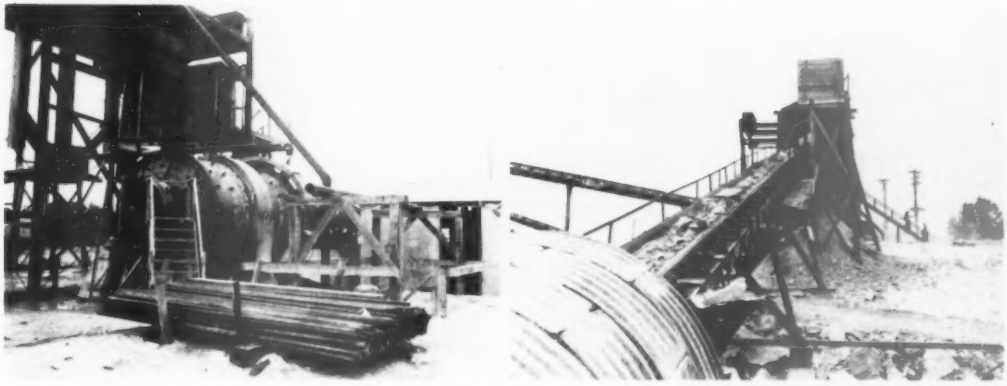


Fig. 2: Conveyor system for handling aggregate at the dam site, approximately 3 miles from the crushed stone plant



Left: View of 8- x 12-ft. periphery discharge rod mill. Spare rods can be seen in front. Right: Minus 8-in. granite rock being conveyed to secondary crushing plant via 36-in. belt. Note weighing device about half-way up the belt

first fire, then the staggered No. 1's. Similarly, the 1-delays in the second row fire first, followed by the staggered 2-delays. Then, finally in the third row, the 2-delays fire, finishing with the staggered 3-delays. The rock tends to break blocky. Air is supplied by a 1200 c.f.m. Ingersoll-Rand and a 2300 c.f.m. Chicago Pneumatic compressor.

The Koehring dumptors go up a slight grade and dump to a hopper under which there is a 48-in. x 15-ft. Telsmith pan feeder. This dumps to a short, inclined, 8-in. spaced grizzly with the oversize falling to a 40- x 42-in. Farrel-Bacon jaw crusher with corrugated jaws. It has a capacity of 300 t.p.h. when set to 8 in. which is the normal practice here. The design of the primary crushing plant, is such that later provision could be made to reject the fines from the grizzly if they contained an excessive amount of dirt, or if they consisted of soft stone. The crushed rock and the fines from the grizzly fall to a small pocket under which there is located a 3- x 6-ft. Jeffrey vibrating feeder that delivers the 8-in. rock to a 36-in. inclined stacker belt that serves the first surge pile in the plant. The belt used here is a Cincinnati Rubber Co. product.

Slotted upper blade of rake classifier can be seen, left. Large bulk of sand in front of rake provides for more drainage time and a drier sand is delivered to the off-bearing belt

The material in the surge pile is fed to its reclaiming belt—a 36-in., Goodyear unit—by a 4- x 7-ft. pan feeder. This feeder works in a satisfactory manner, according to manager McCall, except that it is subject to considerable wear and after handling around 100,000 tons is in need of major repair treatment. As the belt emerges from the concrete and steel tunnel under the surge pile, the rock is continuously weighed on a Fairbanks, Morse conveyor scale so that daily production tonnages can be accurately determined. This weighing device is said to have an exceptionally accurate performance record.

The surge reclaiming belt delivers to a 5- x 14-ft., double-deck dry, Robins vibrating screen that has 6-in. and 3-in. deck openings, respectively. The oversize from the top decks passes to a 16-in. Telsmith gyratory crusher. It discharges to a 24-in. return belt and returns the rock to the belt serving the Robins scalper behind the Fairbanks, Morse conveyor scales so that the rock is not weighed twice. Provisions are made so that rock on the lower deck of the scalper can be recrushed if desired. The cobbles, or minus 6-in., plus 3-in. stone, pass to a 24-in. stacker belt over the reclaiming tunnel.

The material passing the 3-in. opening on the Robins 5- x 14-ft. two-deck screen feeds to a hopper and then onto a 36-in. conveyor to screening station No. 2 containing two Telsmith 4- x 12-ft. two-deck screens, with $1\frac{1}{2}$- and $\frac{3}{4}$-in. mesh on the top and bottom decks respectively.

At screening station No. 2, the $1\frac{1}{2}$-in. mesh on the two Telsmith 4- x 12-ft. two-deck screens removes the minus 3-in., plus $1\frac{1}{2}$-in. aggregate which is fed either onto an 18-in. conveyor, which delivers it to a storage pile of 4000 tons capacity, or to the tertiary crusher, a 4-ft. Telsmith cone crusher.

The material passing $1\frac{1}{2}$-in. mesh and retained on $\frac{3}{4}$-in. mesh on the two Telsmith 4- x 12-ft. two-deck screens can be delivered either to the tertiary crusher, or onto an 18-in. conveyor and thence to a storage pile, also of 4000 tons capacity.

The material in the surge pile is withdrawn to an 18-in. belt via a reclaiming tunnel and the material split to two, wet, single-deck Tyler Hummer screens that have screens sized to meet changing specifications. The oversize is chuted to the rod mill. This mill is fed at both ends and carries a rod load of 22 tons. Its maximum rod load is 38 tons, and at a full rod load has a capacity at this type of feed of around 125 t.p.h. It is driven by a 350-hp. motor through "V" belt drives. The mill unloads to a 6-in. Wilfley, as previously mentioned, that delivers back to a screen with No. 4 mesh on the deck and the oversize returns to the rod mill. The

Conveyor scale located on 36-in. belt which removes 8-in. rock from surge pile

minus No. 4 material from the screen flows through a 6-in. pipe to the Dorrco bowl classifier. The overflow from the bowl, along with the slimes, flows to a large settling basin so that no muddy water reaches the river nearby.

The Dorrco de-water has two sets of reciprocating rakes with the topmost cross rake or blade being about 3 ft. back from the upper end of the unit. This upper blade is about 14 in. high and is the same width as the other blades, but it is perforated with vertical slots of relatively large dimensions. The purpose of this design is to have a large body of sand always draining near the discharge point at all times. The amount of sand here is a function of time, in this type of reciprocating rate mechanism, so by having a large volume of sand here proportionate amount of drainage time is automatically provided for. In its final analysis, it makes a much drier sand to discharge to the 18-in. stacker belt than would be the case with a conventional upper rake section, and it is a very clever and well thought out idea.

Not all the sand goes through the Marcy mill. The total output of sand is 100 t.p.h., 40 tons of which are estimated to have gone through the rod mill. Water is supplied the working plant by pump with a capacity of 1400 g.p.m.

The reclaiming tunnel carries a flat, 30-in. belt, and reclaiming can be done at 400 t.p.h. This belt unloads to a cross inclined belt that discharges to the open hoppers. The cars are hauled to and from the dam site by a 25-ton and 50-ton G.E. diesel electric locomotives. The contractor owns 30 of the open hoppers.

Facilities at Dam Site

Aggregate cars, on arriving at the dam site, are spotted over two hoppers, one for the coarse aggregate and one for sand. Both are equipped with 42- x 60-in. Jeffrey vibrating feeders and serve a 36-in. inclined belt to the storage system. This No. 1 belt dumps to a flat running shuttle belt No. 2 mounted high in the steel structure and this belt builds up the five stockpiles previously mentioned. Details of the eight conveyor belts involved here can be obtained from the tabulation below.

The material in the stockpile delivers to belt No. 3 operating in the tunnel through suitable gates. This belt delivers to the re-screening plant to remove chips from broken stone as previously described. From the re-screening plant the coarse aggregate can go to the cooling towers, or in cold weather the coarse aggregate can by-pass the cooling towers and go direct to the mixer bins via belt No. 4 to No. 8 and finally to No. 5. Conveyor No. 6 is a short shuttle belt over the three cooling towers. Conveyor No. 7 moves the cooled coarse aggregate to the dehydrating screens also previously discussed. Fig. 2 gives the essential features of the aggregate handling system at the dam site.

The Bugg's Island project is a self liquidating one and its purpose is fourfold: flood control, hydroelectric power development, low waste regulation for navigation and pollution abatement, and lastly, several benefits such as recreation facilities, fish and wild life preservation, etc. About 700,000 cu. yd. of concrete are involved.

The mix at the dam uses 75 to 80 percent of portland cement and 20 to 25 percent natural cement. The natural cement is manufactured at the Speed, Ind., plant of the Louisville Cement Co. and has Vinsol resin interground with it so that the minus $1\frac{1}{2}$-in. portion of the resulting concrete has an air content of $4\frac{1}{2}$ percent plus or minus $1\frac{1}{2}$ percent (6 percent max.). Concrete is poured at from 40 to 62 deg. F., depending on air temperatures with from 40 to 100 lb. of chipped ice used per cu. yd. The operators intend to pour concrete at a maximum rate of 60,000 cu. yd. per month. On the "bucket section" of the spillway where the wear is at a maximum the vacuum process is used. By this process mats are placed over the green concrete and a vacuum applied and the water content reduced. The bucket section of the dam is where the water goes over the spillway and at the toe of the spillway the flow is directed upwards somewhat so as to dissipate its energy.

Bugg's Island dam is directed from the Norfolk, Va., office with Col. George T. Derby, district engineer. Fred L. Geis, Jr., is resident engineer, and William D. Nowlin is assistant resident engineer. (J. A.) Jones, Tomkins, and Wright are the dam contractors, with A. L. Pauls as project manager, and Frank Hodges, assistant project manager.

Item	Belt	Motor Hp.	Capacity Ton P.H.	Speed Ft. P.M.	Length Ft.	Lift Ft.	Screens D.D. Tyler 5x10 Ft.	Richmond Eng. 11 Ft. Dia. x 18 Ft. High
Conveyor No. 1	36	125	600	300	500	155		
Conveyor No. 2 Shuttle	36	15	600	300	279.5	Flat		
Conveyor No. 3	30	2-40	400	350	721.5	46.26		
Screening Plant		2-10					2	
Conveyor No. 4	30	40	400	350	302.5	39.17		
Cooling Tank								1
Conveyor No. 6 Shuttle	30	7.5	400	350	24	Flat		
Conveyor No. 7	30	15	400	350	96.87	17.93		
Conveyor No. 8	30	7.5	400	350	111.0	3.46		
De-water Plant		2-10					2	
Conveyor No. 5	30	40	400	350	225.39	53.66		

Details of eight conveyor belts

Two-deck screen with 6-in. top deck and 3-in. lower deck operates dry and prepares the cobbles

Symposium on Subsurface Geologic Methods

"SUBSURFACE GEOLOGIC METHODS," a symposium compiled and edited by L. W. LeRoy of the department of geology and Harry M. Crain, director of publications of the Colorado School of Mines, Golden, Colo., has been announced by the department of publications of the school. The publication comprises 826 pages and includes 436 figures and 12 plates, 4 of which are in color. Forty-three major topics in various specialized fields are treated by authorities and there are discussions of methods in detail that heretofore were unavailable or scattered.

Portland Cement Production

PRODUCTION OF portland cement in June, 1949, amounted to 18,279,000 bbl., an increase of 3 percent over the June, 1948, output, Bureau of Mines reports. Mill shipments totaled 20,667,000 bbl., a decrease of 4 percent compared with the June, 1948, figures, while stocks of 19,782,000 bbl. on June 30 were 59 percent above the June, 1948, totals. Clinker output in June, 1949, amounted to 17,917,000 bbl., an increase of 3 percent over the corresponding month of 1948.

Calcining With Indirect-fired Rotary Kilns

Where high purity is desired such as in the dehydration of hydrated lime to make pure CaO, indirect firing prevents contamination from gases

By FRANK GIBADLO*

THE COMMON TYPE of rotary calcining kiln embodies the direct-firing method of heating permitting the use of high operating temperature ranges. The physical and thermal wear and tear is largely taken up by the expandable firebrick or other satisfactory refractory material, the kind depending upon the reactions to be carried on.

Generally, in the direct-fired type of rotary kiln, the materials are directly heated by the products of combustion. However, in some special applications, this type is not feasible because of the reactions between the products of combustion (i.e. CO_2, SO_2, oxides of nitrogen, etc.) and the material being processed. The results of these reactions produce undesirable characteristics in the final product. In addition some very finely divided or powdered materials encounter excessive friction with the rough ceramic lining of the kiln, and consequently the normal gravitational flow is retarded or hindered through the tube during rotation.

In calcination processes which produce decomposition gases similar to flue gases, there exists a strong tendency to approach a too high concentration of these gases. This will tend to slow down or hinder the forward reaction as a result of reaching equilibrium; consequently, resulting in a slow or incomplete calcination. To minimize this difficulty by the dilution of the flue gases with a suitable atmosphere is uneconomical from a fuel standpoint. Further, an increase in the calcination time results in lower efficiency.

In some applications the indirect-fired rotary kiln will eliminate or alleviate some of these drawbacks. The quality and concentrations of components of the atmosphere inside the tube may be more closely regulated. The heating conditions are changed, since the heat is transmitted through the alloy shell by conduction, instead of by gas convection as in the direct-fired kiln. The inside face of alloy retort is relatively smooth, thus minimizing product travel friction.

Particular attention must be paid to the theoretical assumptions, chemical and physical laws, and to the engineering design, followed later by a proper operational procedure. Otherwise some seemingly simple, taken for granted, minor principles are apt to be overlooked or minimized, which may affect adversely process efficiency and/or desired quality in the finished product.

It has been found by experience that two of these "elusives" are diffusion, and the strong adherence of hot CaO to steel. Their subtle effects were discovered after lengthy experimentation with the calcination of minus 325 mesh Ca $(OH)_2$ to bone dry CaO.

Calcination of Ca $(OH)_2$

Experimental and development work was carried on with an indirect-fired rotary kiln to obtain a high purity product with special characteristics.

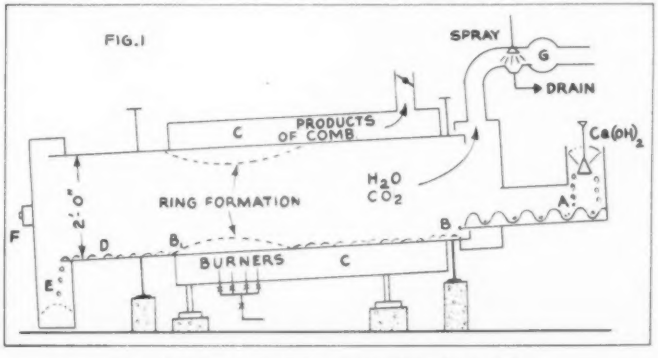


Fig. 1: Calcination of Ca $(OH)_2$ (experimental). Not to scale

Diagram of the process is shown in Fig. 1.

A high purity Ca $(OH)_2$ minus 325 mesh introduced into the rotary tube by worm screw A. Decomposition of Ca $(OH)_2$ commenced at the beginning of heat zone B, and had been calculated to be completely decomposed to CaO at point B, the end of the heating zone and beginning of cooling zone D. The product was finally deposited in container E, which was made airtight as possible to exclude moisture, and prevent its absorption by CaO. G is an exhaust fan with auxiliary water sprays serving to remove lime dust and also to condense out water of decomposition.

F is an adjustable air inlet designed to allow regulation of purging air. In actual practice without any purging air, and temperature in excess of the decomposition point of Ca $(OH)_2$, the product at point B contained 0.5-1.5 percent H_2O and increased to 3-5 percent H_2O at point E. Not much improvement resulted when varied amounts or air were introduced at F to sweep through the tube to lower the concentration of H_2O vapor. By doing this it was necessary to raise the temperature of the combustion zone to compensate for loss of heat. A further increase in temperature to superheat the CaO was tried in order to minimize subsequent reabsorption of H_2O vapor in the cooling zone. This slightly decreased the water content in the final CaO, but only a fraction of that desired.

It was concluded at this stage that water vapor diffused in some manner, contrary to a high velocity flow of purging air, from the heating to cooling zone. Coincidentally after calcining for at least 12 hrs. and approaching temperatures approximately .800 deg. C., considerable trouble was experienced with the natural gravitational flow and "ring" formation of the lime inside the rotary tube. The difficulty at this time was attributed to incomplete calcination, however, later it was found to be an inherent characteristic of finely divided hot CaO to attach itself to steel.

Steps were taken to overcome this "ring" formation. The first method utilized a long rectangular steel bar which rested on and scraped the inside wall of the tube during rotation; the second method employed a sta-

*Partner, Consulting Research Associates, Beverly, Mass.

tionary chain anchored at both ends to act as a scraper. No outstanding success was achieved by these auxiliary mechanical methods. This inherent "sticking" characteristic of hot CaO has been overcome by the development of a "special alloy" tube in conjunction with the use of a specially designed cooler. This cooler consists of tubes through which the hot material passes; the cooling air surrounds these tubes.[1]

Diffusion of Water Vapor

Meanwhile the problem of diffusion of water vapor had been undertaken. Originally the velocity rate was determined by size of retort and volume of purging atmosphere handled, from which an average or medium velocity rate through the tube was arrived at. This calculated velocity rate was greater than the diffusion rate. However in such calculation there is a tendency to overlook the fact that in such flow the velocity of a fluid is greatest at the center, and lowest or practically nil at the wall surface. In this surface stratum, which is practically static, diffusion is free to travel upstream, Fig. 2(A). Another contributing factor is natural turbulence aggravated by auxiliary equipment inside the retort shell such as coils, baffles, etc. They deflect the gaseous stream aiding diffusion to work upstream by convection, Fig. 2(B).

Since hot gases tend to rise and form a top stratum and travel in this channel, the bulk of the velocity is in this area. The bottom stratum relatively travels at a much lower velocity. This gives diffusion an opportunity to travel upstream in this lower section whenever stream velocity rate is less than diffusion rate, Fig. 2(C).

It is evident that the bulk of diffusion exerted itself by a combination of all three methods as described.

Secondary Problems

Secondary problems associated with indirect-fired rotary kilns should be given strong consideration, initially if possible in the design of process and equipment. In doing so, many subsequent troubles and shortcomings are eliminated during operation.

The dust and fumes produced during calcination, and which are carried out with the gaseous atmosphere, in some cases, assume a considerable portion of the charge. The dust and fumes in many localities are taboo. The method of removal is usually determined by feasibility and economic consideration. Generally, it is preferable to employ tandem exhaust fans (oversize). In some fan installations it is necessary to include a water system for removing dust and fumes.

The proper type and alloy composition of the retort tube should be selected to insure stability against heat warping, corrosion by hot flue gases and products of decomposition, and chemical reaction between retort and products being calcined.

The selection of proper type heating equipment and fuel is important. Provisions should be made for a closer draft control. The flue pressure should be atmospheric, if too low heat is lost up the flue. If too high the flue products tend to slow down combustion and are expelled into the room. When burning fuel oil, it is mandatory to install sufficiently large burner blocks to curtail their fusing to slag.

Ample provisions should be made for the thermal expansion of the retort. The wheels, rollers, and trucks should automatically align at all retort temperatures. To prevent warpage of the retort tube in the event of power failure it is necessary to rotate the tube by an auxiliary power drive.

In the design of a new calcining process, it is strongly emphasized that the materials in question be thoroughly checked and tried out in a miniature experimental rotary kiln. Long term tests are mandatory especially when dealing with fine mesh products. This determines if the fine mesh material is free flowing under high temperature conditions. Experience has shown that no "sticking" or "ring formation" of lime, was evidenced until after at least 12 to 24 hr. continuous calcining. The "ring formation" during the reduction of sponge iron with hydrogen at high temperatures followed a similar cycle.

Summary

Some traits of the direct and indirect fired rotary kiln have been outlined. The primary and secondary problems encountered during calcination of Ca $(OH)_2$, particularly of "diffusion" and of "ring" formation, are presented.

Strong emphasis is placed upon preliminary theoretical assumptions, design and thorough experimental pilot plant runs.

It is evident that the indirect-fired rotary kiln offers many advantages for special applications, such as high purity and special product characteristics, better process control, and closer atmospheric regulation in the kiln.

Besides calcining and drying, the indirect-fired kiln offers many possibilities for use in heat treating, sintering and as a reaction chamber.

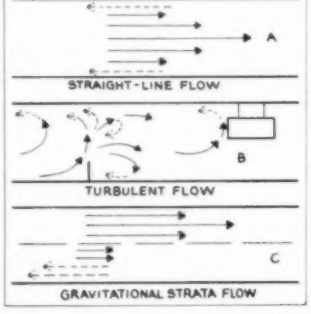


Fig 2: Diffusion of water vapor. Dotted lines show possible diffusion paths

Gypsum Board and Lath

BY THE END of 1948 the shortages of gypsum board and lath which had been affecting building construction since the beginning of 1946 had largely disappeared, *Construction and Construction Materials* reports. Postwar plant expansion has been large and production increases substantial, with output in 1948 some 40 percent higher than the previous record set in 1947. Although scattered complaints of shortages are still heard, it seems probable that the period of seasonally low building activity in the winter of 1948-49 will have permitted accumulation of distributors' stocks to the point where no more than isolated shortages are to be expected this year.

Plant expansion in the industry has been completed and existing facilities will enable the industry to produce approximately 5,500 million sq. ft. of board and lath annually. With 1949 requirements remaining substantially unchanged from the 1948 level, it is expected that gypsum board and lath will be in fairly easy supply this year. Despite the fact that a smaller number of housing units is expected to be started during 1949 than in 1948, the anticipated increase in the use of gypsum board and lath per housing unit accounts for the increase in the 1949 requirement. It is assumed that the growing substitution of gypsum products for lumber will occur mainly through increased use of asphalt impregnated sheathing, the report states.

N.C.S.A. Safety Committee

NATIONAL CRUSHED STONE ASSOCIATION, pursuant to a resolution adopted by the 32nd annual convention, has appointed a Committee on Accident Prevention, the purpose of which is to promote in every possible way the prevention of accidents in plants operated by the members of the Association. Personnel of the committee is as follows: F. J. Buffington, New York Trap Rock Corp., Newburgh, N. Y., chairman; C. A. Gustafson, Callanan Road Improvement Co., South Bethlehem, N. Y.; E. F. Haberkern, Columbia Quarry Co., St. Louis, Mo.; T. W. Jones, New Haven Trap Rock Co., New Haven, Conn.; Mary Elizabeth Wilson, Granite Rock Co., Watsonville, Calif.; and H. F. Yotter, General Crushed Stone Co., Easton, Penn. The Committee's first step will be to take inventory of the status of accident prevention in the industry by sending a letter and questionnaire to members of the industry.

(1) Communication from W. S. Dickie, Vulcan Iron Works, Wilkes-Barre, Penn.

Building housing primary crusher, right, with 18-in. covered belt conveyor connecting to enclosed bins, left

Dual-Stage Crushing

Reber Brothers producing masons sand and concrete sand from consolidated sandstone deposit requiring blasting

REBER BROTHERS sandstone quarry and plant, located near Lebanon, Penn., is producing masons sand and concrete sand at the rate of 50 t.p.h. from a consolidated sandstone deposit that requires blasting. The plant has more than doubled production since the recent installation of a New Holland 3030 double impeller breaker, according to the brothers, P. H. and H. H. Reber, who, with their father, A. C. Reber, conduct the operation.

Sandstone is blasted from an 85-ft. face and loaded by a Buckeye ¾-cu. yd. power shovel to trucks for haulage to the crushing plant. A reciprocating plate feeder regulates the flow of quarry-run material into the crusher, which is driven at 612 r.p.m. by two 30-hp. electric motors through V-belt drives. After crushing, the material is conveyed by a bucket elevator to a 2- x 6-ft. vibrating scalping screen from which all plus ⅜-in. is returned to the crusher by a second bucket elevator. The amount re-circulated is less than 20 percent of the total amount fed the crusher.

Minus ⅜-in. material through the scalping screen is carried via an 18-in. belt conveyor, 114-ft. centers, to a 2- x 10-ft. double-deck screen where a ¼-in. concrete sand and a No. 8 masons sand are sized. Bucket elevators carry the finished products to bins. A 24-in. belt conveyor is used for loading from bins to trucks and material is transferred from bins to stockpiles by belt conveyor. Bucket elevators, scalping screen and belt conveyors are also of New Holland manufacture.

To further increase production, the Reber brothers are installing a 16- x 16-ft. New Holland roll crusher at the end of the sizing screens in the bin building. Oversize will be scalped off and fed through the roll crusher as a secondary crushing operation. All crushing, screening and conveying units are electrically driven.

Primary crusher, powered by two 30-hp. motors, which takes stone up to 30 in. in diameter. Note V-belt drives from two motors, lower left

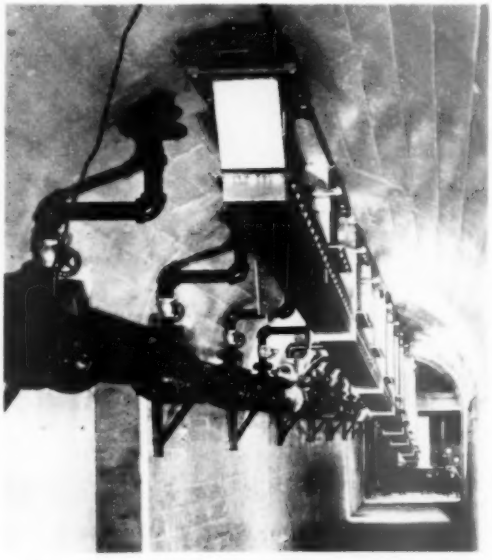
Loading quarry-run stone with ¾-cu. yd. shovel for haul to plant

Wyoming Phosphate

INVESTIGATIONS of two phosphate deposits in the Wind River mountains of central-western Wyoming, made by the Bureau of Mines to help government and industry determine probable mining and ore-treatment costs, are described in a report recently made public by the Bureau. Topographic and geologic plan maps, logs of drill holes, analyses of samples, and discussions of the physical features and climate, history and geology of the area are included. Copies of the publication, entitled Report of Investigations 4434, "Investigation of the Lander Phosphate Rock Deposits, Fremont County, Wyo.," may be obtained from the Bureau Publications Section, 4800 Forbes Street, Pittsburgh 13, Penn.

Low Cost, Trouble-Free Silo Withdrawal

Silos and flat-bottom bins emptied by new conveyor method at Bath, Penn., plant of Pennsylvania-Dixie Cement Corp.

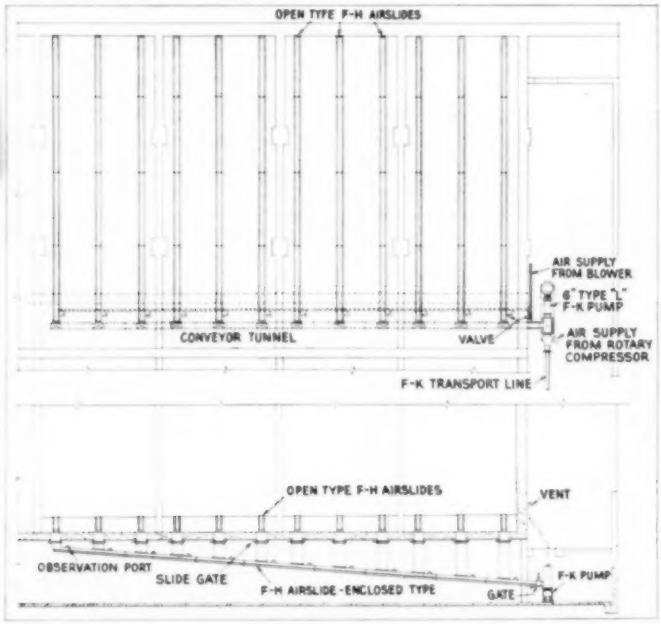


Completed installation of airslide conveyor under cement bins. Black pipe left, delivers air at 3 p.s.i. to airslides in bottom of bins, which in turn deliver cement to main conveyor, center, which transfers material to cement pump, background

IMPROVEMENTS IN the conveying of finely ground, dry materials should be of interest to many outside the portland cement industry, particularly those who have encountered the problem of emptying flat-bottomed bins or silos, and seek a cheap and efficient manner of accomplishing this conveying. When we refer to these other fine materials, we are thinking of hydrated lime, ground lime, pulverized limestone, gypsum, talc, silica flour, and other products of the stone industries. And when we use the term "fine material" as applied to the conveying technique by the use of air activation and gravity discussed herein, we are using it in a broad manner, for it has been indicated that materials as coarse as ¼ in. can be handled by it, provided there is sufficient 100- or 200-mesh materials along with the coarse materials. Pumice or perlite might be handled in sizes that are not usually associated with the term "fine materials."

The Fuller-Huron Airslide installation at Penn-Dixie Cement Corp. Plant No. 6, Bath, Penn., employs F-H Airslides of both the "open type," and the "enclosed type." The "enclosed type" conveyor is a long, steel, box-like conveyor, divided into two horizontal halves by a fabric diffusing medium of low air permeability that gives a uniform distribution of the air that enters into the lower half of the unit, then the air diffuses through the fabric membrane and fluidizes the cement to be conveyed. The "open type" is similar in construction, but the upper half or cover is omitted. The "open type" conveyor operates under a considerable "head" of cement and is the first installation of this type conveyor in the Lehigh Valley. Its application here is a development resulting from the successful earlier experience on the S. S. Samuel Mitchell of the Huron Transportation Co. where the equipment has some depth of material over it and the design of which was based on previous experience with installations at Huron Portland Cement Co. plants where bins contained substantial heads of material. From the experience gained on this bulk cement carrier, it was indicated that a far greater usage possibly existed in the handling of materials when the unit is covered to great depths as encountered in silos, flat bins, or similar storage systems. The airslide went into operation at Bath on June 1 of this year, and we inspected it 15 days later. In that time, a considerable volume of cement had been handled without difficulty.

At Plant No. 6 there is a long row of flat bottom bins that were previous-



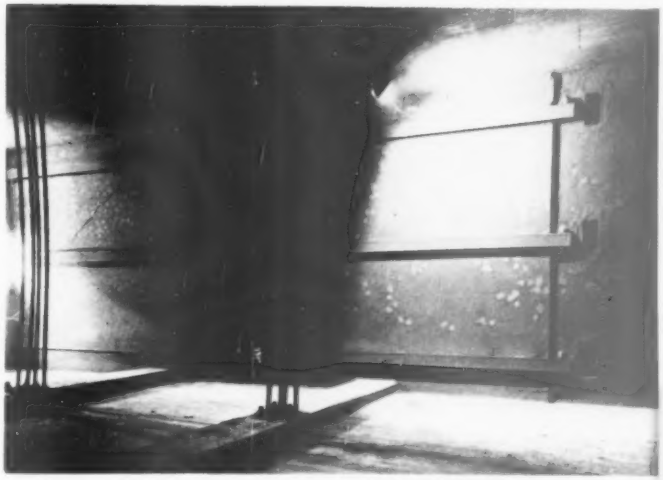
Diagrammatic sketch of four flat-bottom cement storage bins each equipped with three open-type airslides. Bin bottoms sloped toward outlets

ly emptied by a series of screw conveyors that operated in tunnels below them. Four of these silos were selected to try out the airslide. A false bottom of concrete was put in these four bins. The bottom has a slope of 4 deg. from the horizontal, with the pitch towards the outlet. The accompanying line cut shows the details of how this was carried out, and it will be noted that the airslides in the bins are on roughly 8-ft. centers. The maximum depth of material over the conveyor is 30 ft., and the system has a rated capacity of 250 bbls. per hour.

The F-H Airslide, for conveying fine, dry materials without the use of any moving parts, consists of an inclined porous medium which supports a stream of material that has been sufficiently fluidized by low pressure air passing through it, that the material flows by gravity. At the Penn-Dixie installation, a 10-hp. General Electric motor drives a Spencer Turbine blower that delivers 400 c.f.m. of air at 3 p.s.i. There is no appreciable wear on the fabric, comprising the porous medium, and it stands up well under temperatures in the 250 to 300 deg. F. range. If higher temperatures are encountered, a more heat-resisting porous medium is used; however, the one at Plant No. 6 is canvas fabric.

With this type of installation, flooding is not a problem. It takes up much less space than a screw conveyor of similar capacity and is much cheaper to install and operate. At Penn-Dixie, only one man is now required in the tunnel to supervise and operate the installation. No problems relating to starting the flow of cement are encountered and that portion over the outlet or hole in the bottom of the bin seems to empty first, followed by a gradual caving of the material progressively towards the back wall until the bin is practically empty. To date, no information is available as to just how far down the airslide will empty these bins, with the feeder airslides on about 8-ft. centers, but it is expected that the material will be carried down to around 35 deg. slope. However, if it is later found that residual cement in the bins is more than desired, it would be a simple and cheap matter to install additional conveyors in the bottom of the bins. At this plant only one of the feeder conveyors and the main conveyor is operated at a time.

Cross-airslide in tunnel under bins collects cement from airslides in bottom of bins



Detail of the airslide installation in one of the bins. The gravity conveyor units are covered with a porous fabric. Bins are constructed with a 4 deg. slope toward the outlet end

The airslide installation is being used to deliver cement to trucking bins from which the material is truck-hauled to the company's No. 5 plant where it is used in the preparation of masonry and high-early strength cements. A Gramm truck-trailer which employs the same aeration principle as the airslide for discharge, is used to haul the cement to the new masonry cement plant. In the August cement issue was published a description of Pennsylvania-Dixie Cement Corp.'s new and modern masonry cement plant that went into operation May 31 of this year.

Report of Safety Research in Compressed Air Systems

DEMONSTRATION of the existence of a carbon-oxygen complex in the carbon deposits that sometimes occur in compressed-air systems paves the way for further research aimed at eliminating or controlling explosion and carbon-monoxide hazards in the use of compressed air. Explosions and the formation of significant quantities of carbon monoxide in compressed-air systems are rare and there is considerable difference of opinion regarding their cause. A report, recently released by the Bureau of Mines (Investigations 4465), describes experiments which were carried on with carbon deposits from air compressors, and discusses results. Diagrams amplify the text, and a bibliography is included for the benefit of those wishing more information on the subject.

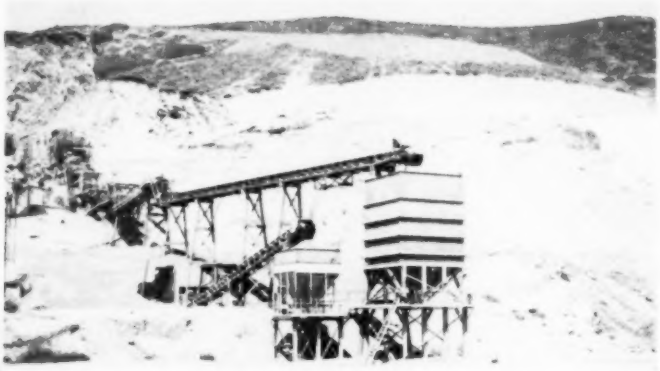
Army Drilling Techniques

DRILLING TECHNIQUES used by U. S. Army engineers to study ground conditions for heavy structures might be adopted by the mining industry to sample certain types of mineral deposits, Bureau of Mines Director James Boyd commented recently in releasing a report describing Army drilling methods at the Fort Randall dam site in South Dakota.

Using big drills that cut out a core 36 in. in dia., the Army engineers sunk holes at the dam site to study ground conditions and obtain sub-surface samples for physical testing. The holes were large enough for a man to enter, make on-the-spot examinations of ground conditions, and take large samples for testing.

One possible application of large-diameter drilling is in the examination of low-grade manganese deposits immediately adjacent to the Fort Randall Reservoir if and when these deposits are developed by private industry, the Bureau of Mines points out. However, cost of large diameter drilling limits its application in the mining industry generally.

A copy of Information Circular 7508, "Formation Sampling with Large-Diameter Drill Holes at Fort Randall Dam Site, South Dakota," may be obtained free from the Bureau Publications Section, 4800 Forbes St., Pittsburgh 13, Penn. Drilling and core-recovery procedures, labor wages and other costs, and safety measures are included in the report, as well as photographs.



Over-all view of straight-line crushing and screening operation of Livingston Truck and Materials Co.

Livingston Truck and Materials Co. also produces commercial sizes. Plant features use of hydraulic jacks for quick setting of crushing rolls in changing sizes

Crushed Stone for Harbor Development

THE HARBOR of Los Angeles, Calif., is really made up of three separate harbors; San Pedro, Wilmington, and Long Beach. They are integrated into a complex system of outer and inner harbors, channels and other waterways, all of which were man-made. Rock, riprap and other stone have been pouring into the jetties and breakwaters for 30 years or more and today the harbor is one of the best in the world and one of the busiest. The building of the harbor still continues and this year the Livingston Truck and Materials Co., completed delivery of 700,000 tons of small diameter stone to the United Construction Co., which placed the materials as fill. To supply this rock, as well as crushed rock for concrete purposes, bituminous materials, and other uses, the company built a new crushing and screening plant near Portuguese Bend about five miles West of San Pedro in the Palos Verdes hills. The plant overlooks the Pacific Ocean. A paved highway winds around the ocean side of Palos Verdes hills and the approaches to this scenic highway serve the plant.

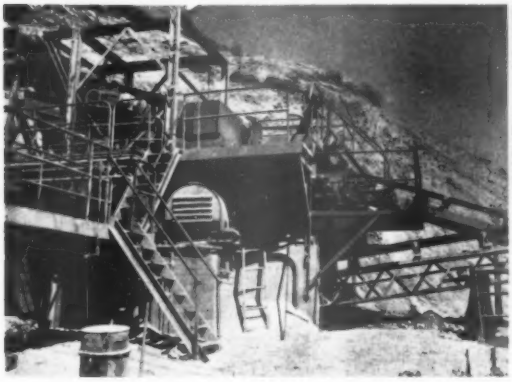
Bench Quarrying

Rock is secured from a series of four levels above the plant with the several and various openings in the side of the mountain connected by suitable roads. Loaded quarry trucks deliver on a down grade to the primary crushing plant. The complex mixture of igneous and metamorphic rocks in the quarry is such that considerable drilling and blasting is necessary. Most all shooting in the quarry is done with Hercules powders. Embedded in the matrix are some large boulder-like inclusions that weigh sometimes in the 5- to 10-ton range. When these are encountered, they are pushed over a convenient bluff into a ravine where they can later be recovered for large riprap stone.

Natural fracturing of the material due to ancient geological movements in the area has been so complete that at first glance the material does not look like a hard, serviceable stone; but on examination and a sifting out of fines, it becomes hard angular pieces of rock which, when properly sized, meet all the local city, county and state specifications. The deposit is so complex and varied that a number of openings have been made and the choice of which to use depends somewhat on the type of materials desired. For instance, if pit-run is wanted, a Link-Belt Speeder shovel loads from the best location of this material. The deposits are ideal for geologic studies, for small amounts of gold, silver, lead, zinc and other ores have been found there as well as veinlets of gypsum, calcite, etc. These, however, are in such insignificant amounts that they are only of passing interest.

A 2½ cu. yd. Esco bucket is provided for the power shovel. This shovel is handling upwards of 3000 tons of material per day and is equipped with a Speed-O-Matic control and is powered by a D-1700 Caterpillar diesel.

Loading stone for haul to primary crusher with 2½-cu. yd. power shovel

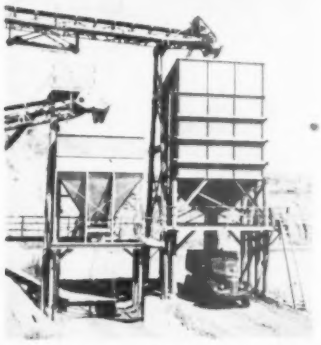


Oversize from vibrating screen, upper left, falls to 54- x 42-in. crushing rolls. Right: dozer pushing material over gate of reclaiming tunnel

The crawler treads on this shovel see a lot of service because of the excessive maneuvering around to the various quarry openings that it has to do in the course of a week's work. The crushing plant is located at right angles to the main range of hills and is so constructed that the conveyors used do not have to lift the material to any great extent. It might be called a "straightline" operation. There is no covering over the various plant units.

Plant Design

Design and erection of the plant was by Pioneer Engineering Works, Inc., with a very simple flow of material that is primarily intended to give two sizes of rock only: a 1-in. material, including the fines; and a minus 3-in., plus 1-in. crushed rock for fill, base materials, etc. The primary crusher is a 30- x 42-in. Pioneer jaw; the secondary crusher is a set of 54- x 42-in. Pioneer double rolls with final reduction accomplished through a set of 42- x 22-in. Pioneer double crushing rolls. There are two double-deck dry screens, both 5 x 14 ft., which operate dry. All of the belt conveyors are 30 in. except for a return belt to the smaller set of rolls and a reclaiming belt in the tunnel, which are 24 in. These belt conveyors were supplied, built and erected by the Livingston Truck & Materials Co.



Large truck hopper, right, handles minus 3-in. stone from main plant belt, while smaller hopper, left, is fed from reclaiming belt under ground storage pile

Loaded trucks wind down the road to the primary crusher where the stone is dumped to a bin over a pan feeder that serves the crusher. The throughs from the crusher fall to a short, slightly-inclined belt that delivers to the scalper screen, the top deck of which has $1\frac{1}{4}$-in. wire and the lower deck, $3\frac{1}{2}$-in. wire. When the larger size of rock is being processed, the top deck is removed. In either event the plus materials fall to the larger set of rolls. The roll product and the fines from the scalper fall to a slightly inclined belt which delivers to the final 2-deck screen. This screen has $1\frac{1}{2}$- and 1-in. wire on it. The top deck is essentially a wear-taking or load relieving deck.

Minus 1-in. material falls to ground storage below, or it can pass to a slightly inclined belt and be dropped from it to the same ground storage pile. When used in this manner this belt better distributes the material over the reclaiming tunnel. By means of a jumper chute the materials can go on to a longer, horizontal belt and to the larger steel storage bin that is used mostly for the 3-in. rock. If the smaller stone is desired, the plus materials on the two top decks (one or both decks) can be returned via an inclined return conveyor belt to the second set of Pioneer rolls. These double rolls discharge back to the same belt serving the larger or first set of rolls.

Roll Crusher Quickly Reset

It will be seen that in the change from 1-in. to 3-in. or intermediate mixes or vice versa, that the set of the crushing rolls must also be changed. To those familiar with roll crushing this usually means, first, finding the large open end wrench which is usually buried in muck someplace, and, second, going through the arduous work of unscrewing the large tension rod bolts, taking out or putting in the necessary "horseshoe shims," and then re-screwing the nuts—a time consuming job that can usually be measured in terms of hours. Here, these operators have rebuilt this section of the rolls and instead of using nuts, two large capacity hydraulic jacks are used, each with about 4-in. dia. piston mechanism: one jack to each tension rod. The jacks each operate against a heavy welded steel member. With this device it takes only seven minutes to change from one size of stone to another and no great amount of manual labor is required.

The rock for use in the harbor area is hauled to a barge-loading belt conveyor in San Pedro. The company uses 10 trucks and trailers in the

(Continued on page 85)

Receiving hopper for quarry stone, top, and 30- x 42-in. jaw crusher, center

Firing Kilns With Anthracite Coal

Cement manufacturers in Lehigh Valley thus far confine use of anthracite to blends with bituminous coal. Properties of anthracite fines enumerated

By WALTER B. LENHART

BURNING OF pulverized anthracite fines in a rotary kiln in both the portland cement and the lime industries is a subject that is receiving a considerable amount of attention from two important groups. First, there is every indication that if anthracite fines that are now being produced from dredging, screenings from the breakers, and from froth flotation plants can be successfully used for kiln fuel, a saving in fuel costs, for portland cement, as an example, could be in the 7c per bbl. range when using a 50-50 mixture of bituminous and anthracite coal. If 100 percent anthracite fines can be successfully used at present price differentials, the savings would approach double that figure. The possibility of these savings has aroused keen interest by those rock products industries where fuel requirements are a major part of operating costs.

The second group which has an important stake in this problem is the anthracite industry itself. The use of anthracite coal has slumped from a high of almost a hundred million tons reached in 1917 to a little over half that figure for the past ten years. Last year, anthracite producers sent about 11 percent less tonnage to market than they had expected. An 11 percent cut in most industries in one year would mean serious cut-backs. These production losses are not due to lack of availability of anthracite or semi-anthracite coals, but are due to the encroachment of natural gas and fuel oils in heating plants of all types, the advantages of which are too obvious to discuss here. With the outlook as it is, the anthracite coal producers have formed an Anthracite Institute and are vigorously looking for new markets for the material. One promising field being investigated by the Institute is the portland cement industry. The subject of wider coal consumption in kiln firing was dwelt upon in an article published in ROCK PRODUCTS almost four years ago (October, 1945, "Decreasing Fuel Costs in Pulverized Coal-Fired Cement Kilns," by J. D. Clendenin, Assistant Professor of Fuel Technology, Pennsylvania State College).

Factors in Burning

To use even a 50-50 mixture of anthracite and bituminous coal in the production of portland cement requires a new approach. This includes plant changes, investment in some new equipment and a *conviction in the mind of the operator that it can be done*. Before plant management could consider changing the fuel set-up, it would want to be assured of a constant supply of the new fuel for many years to come, and at a price differential that would make the change attractive. For a while, as one cement operator pointed out, the difference between anthracite fines and bituminous coal was about $2.50 per ton. Recently the bituminous coal operators reduced their price so that the difference was only about $1.75 as the anthracite producers did not meet the cut. A preliminary survey that included a few of the largest anthracite coal producers and the Anthracite Institute has indicated that, first, there is an ample supply of anthracite fines that will last at least 20 to 30 years; and, second, the cost to the user is based on the coal miners' costs and not on the demand. So, if the portland cement industry does work out a satisfactory method of using anthracite fines, it could mean a lower cost for the coal because larger tonnages usually mean lower costs to the miners. One authority stated that there was available now above ground, residue from washing plants and similar materials sufficient to produce around 150,000,000 tons of anthracite fines. The view was generally expressed that there would be no great change in cost of anthracite fines due to any increased demands by our industries.

It is important that the moisture content of the coal be kept low and at least uniform, for, obviously, increases in the water content of the coal mean more water in the burning zone, and this in turn means more fuel.

With practically all the operators and coal engineers we contacted, preheating of the primary and secondary air was considered essential to burning a 100 percent anthracite, and preheating of the secondary air was advised for the leaner mixes. One expressed the opinion that primary air should be heated to around 250 deg. F. and the secondary air as high as 1000 deg. F. for full 100 percent anthracite fuel. Others expressed figures nearer 600 deg. F. for the secondary air and were reluctant to name a figure for the primary air except to say that it should be as hot as possible. Still another pointed out that if the primary and secondary air are heated higher than standard practice indicates, the volume of air, due to the rise in temperature, would be larger,

Inside storage pile of 50-50 anthracite, bituminous coal mixture at Evansville, Penn., plant of Allentown Portland Cement Co. Note overhead, open, screw conveyor that automatically spreads pile as it is being filled

and that for an equivalent oxygen content larger ducts, burner tubes, etc., would have to be provided. This might entail some relatively costly test runs to determine the exact size of apparatus needed.

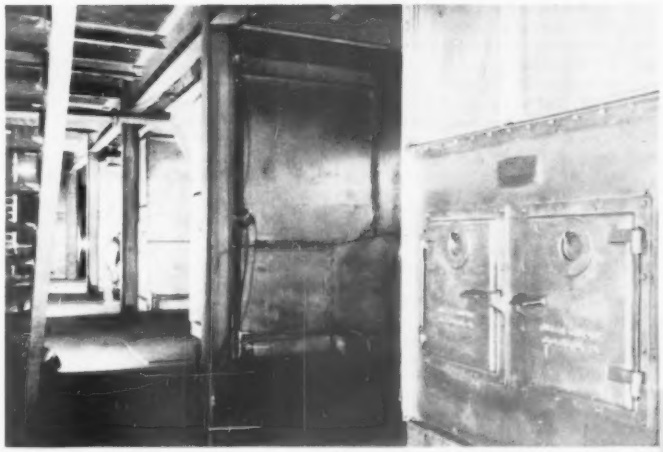
Higher surface area of the anthracite coal may help combustion. Drying the coal before grinding so as to maintain the mill's capacity is considered desirable.

It has also been suggested that a duplicate burning system be used at the kiln so that any desired amounts of bituminous and anthracite coal could be burned alone, or simultaneously.

Fineness of the coal mix at one operation was from 80 to 85 percent minus 200 mesh. This was using a 50-50 mixture. Finer grinding, it was indicated, would make for better performance with the higher anthracite mixes. One member of the Anthracite Institute staff said that Europeans had been burning 100 percent anthracite for some time and it was their observation that a better heat transfer was effected by its use and there was a shift in the calcining zone towards the discharge end. This in turn indicated lower exhaust temperatures with less volume of these gases. A shorter, brighter flame of less cross section was observed there, it was said.

Difference of opinion as to the grindability of anthracite and bituminous coals has been raised as one of the objections to its use. One operator indicated that the maintenance cost of equipment for grinding anthracite was up to ten times that for bituminous. Another with different grinding equipment thought that the difference was so small as to be practically ignored. Evidently, the type of equipment for pulverizing is the crux of this question. River coals, and coals from flotation processing, could have a higher silica content, and in some types of equipment this could raise maintenance costs seriously. One operator, having a river-dredged coal and a grindability in the 28 to 30 range, at first said his grinding mills showed a decrease in production, but through closer attention by the millmen the production has risen to a higher figure than that experienced with bituminous coal alone.

One cement producer pointed out that the sulphur content of anthracite coal varied and should be considered when using it. A study of tabulated data before us indicates that the sulphur content of the anthracite coal at the face varies with the districts and ranges from a high of 1.2 percent to a low of 0.6 percent with an average of 0.9 percent. However, coal dredged from river sources may have a wider variation due to contamination from other sources. Other analyses indicate that 0.7 percent would be nearer the average for the finer sizes at delivery points. Another user of a mixture of anthracite and bituminous coals with several years of experience, in data supplied the writer, ignored the sulphur content entirely. Just how serious the sulphur content of coal is and its relation to the end-product, portland cement, is open for discussion.



These coolers in the Evansville, Penn., plant of Allentown Portland Cement Co. make it possible to have the secondary air at a higher temperature than was the case before the coolers were installed

Sources of Anthracite

Many anthracite coal producers with operations on the Schuylkill and Susquehanna rivers have dumped their screenings into the drainage systems of these two streams for years. The lighter and finer coal accumulated in certain sections in such amounts that it was profitable to dredge these deposits, using simple flat barges with suitable screening, tabling, and dewatering equipment, so that a fairly clean product was made available at a low price. Production figures for 1947 for this type of material were about 1,200,000 tons, but recently anti-debris legislation has curtailed this type of production somewhat, and most of the dredged coal was said to be coming from bars that were so located that the effluent from the washing plant did not get back into the stream. While this type of material is probably cheaper than the others, its source of supply could be erratic and it often contains sufficient silica to affect the grinding maintenance costs on some types of grinding equipment. It is usually delivered wet by trucks to favorably located plants where it is stockpiled to drain to a reasonably low moisture content.

At one of the coal plants of Lehigh Navigation Co., near Tamaqua, Penn., the finer screenings from the main screening plant are being beneficiated by the use of the froth flotation process. This plant is turning out about 550 tons per day of a minus 20-mesh coal that is all sold for steam-making purposes. It has been indicated that if a larger market could be reached, the output could be materially increased, as many producers in the area do not have flotation as a part of their processing. This process could conceivably be used to treat accumulated debris piles from former operations.

The flotation technique is very simple and effective, but the coal recovered by this process has a high moisture content and the moisture does not appear to decrease materially in storage. The de-watering and drying equipment in a plant visited was more costly and elaborate than was the equipment in the flotation plants proper.

Coal recovered by this method is of such grade that a steam power plant has no difficulty in burning a 100 percent anthracite product. This fine coal has about 14 percent minus 200-mesh material in it, and one portland cement operator who tried a carload of similar material lost most of the fines as his drying equipment did not have a dust collector on it.

At the flotation plant the coal fines were dried down to a water content sufficiently low that it was sensibly dry and dusty. This type of coal might be shipped to the user in a reasonably moist state so as to eliminate dust in handling and unloading, yet dry enough to permit it to be easily blended or proportioned with other coals where the unit system of drying is used. If a duplicate system of drying and pulverizing is available at the cement plant the coal possibly could be shipped still wetter, with due considerations for freight rates and the costs of shipping this added water content. However, it is our studied

opinion that flotation coal from the anthracite operations has its place in the general subject of burning anthracite fines.

Regardless of whether the finer grades of coal are prepared by flotation, dredging, screening, or what not, they are saturated with moisture at the completion of the beneficiation process. As a corollary, the finer this material is, the more water it will hold (flotation coal "concentrate" will drain down to about 18 percent moisture). The installation expense, operating and maintenance cost of drying and grinding this type of material may be such that a better approach would be for the anthracite operator to grind and dry the coal prior to its shipment. Some type of hot air-swept ball or tube mill, such as Hardinge or Foster-Wheeler Co. equipment that is said to be used in some of the newer and more modern steam generating plants (Sunbury, Penn.), might be used at the coal source. This type of dry ground material then could be delivered in closed hoppers, or even a tight, steel boxcar that is provided with conveyors like Fuller-Huron airslides which could deliver to Fuller-Kinyon pumps and then to the silos ahead of the burners. Large grinding and dryer capacity with fuel for drying used at the source of that fuel, and the convenience to the cement industry, might encourage its use to a greater extent.

May Use Anthracite Exclusively

Coal producers, such as the Philadelphia and Reading Coal and Iron Co., are naturally quite optimistic about the use of anthracite in portland cement kiln firing and emphasize their prediction that use of 100 percent anthracite will eventually be perfected. One factor that coal producers pointed out was that due to the high demand for portland cement during the past few years, cement mill operators have been reluctant to do any experimental work that might interrupt the normal production schedules. With a lessening of demand for portland cement, the coal producers feel that times will be more favorable for experimental work, especially where the end result could lead to a cost reduction in cement production. They point out that pulverized anthracite has been burned in steam generating plants for over 25 years. The problems of a shorter flame and a longer "brush" (that area between the burner and the flame) will probably be adjusted by a deeper nose ring on the end of the kiln so as to hold the clinker at that point longer, pre-heating of primary and secondary air, improvements in grinding and drying technique and dust collectors at necessary points in the drying and pulverizing system. Projection of the end of the burner further into the kiln to offset the slightly higher ignition temperature of the anthracite coal, water cooling of the burner tip if necessary to prevent coke formation, and even the possibility of using oxygen-enriched air may help solve the problem, for low cost oxygen was said to be soon available at a cost of about one-fifth the prevailing prices.

Properties of Anthracite

The finer sizes of coal as prepared in the anthracite mining section of Pennsylvania are referred to as, rice, barley, No. 4, and No. 5. The so-called "silt" is a minus 14-mesh product. Other sizes here mentioned have the following screen characteristics:

Size of Coal	Top Size	Lower Size	Oversize	Undersize Max.	Undersize Min.
Rice	3/16 in.	5/16 in.	10%	17%	7½%
Barley	3/32 in.	3/16 in.	10%	20%	10%
No. 4	3/64 in.	3/32 in.	20%	30%	10%
No. 5	———	3/64 in.	30%	No Limit	

(Maximum impurities are 13, 15, 15 and 16 percent respectively.)

Prices of these sizes range widely and one operator who had worked with fine coal dredged from rivers in the area was talking in terms of 50c per ton or thereabouts. However, the figures supplied here were jointly prepared by the United States Bureau of Mines and the Anthracite Institute, and, for the years indicated, were as follows (average sales realization per ton of breaker shipments):

Year	Rice	Barley	Steam* Other Coals
1943	$3.12	$2.25	$1.42
1944	3.59	2.53	1.66
1945	3.91	2.65	1.75
1946	4.52	3.11	2.01
1947	4.83	3.56	2.31

*No distinction made in the price of the three finer sizes of coal used for steam generation.

These prices compare to a price of about $10 per ton for the four larger sizes of anthracite coal such as egg, stove or chestnut. Added to these costs must be the freight rates, and using the same source of information the railroad freight rates to representative cities is as follows (does not include 4c Federal tax effective October 12, 1948):

Cities	Rice and Smaller
Albany, N. Y.	$2.83
Binghamton, N. Y.	2.04
Buffalo (local) N. Y.	3.28
New York Tidewater	
Upper Piers (N. J.)	2.55
Lower Piers (N. J.)	2.51
Rochester	3.17
Syracuse	2.83
Allentown, Penn.	1.77
Lancaster, Penn.	2.10
Philadelphia, Penn.	2.66
Reading, Penn.	1.84
Atlantic City, N. J.	3.39
Jersey City (local) N. J.	2.83
Newark, N. J.	2.83
Trenton, N. J.	2.66
Baltimore, Md.	3.17
Washington, D. C.	3.17
Chicago (local)	4.97 a
Detroit	4.50
Milwaukee (local)	5.20

(a) Rate on No. 4 Buckwheat is $4.86

Before proceeding with a discussion of the problems involved and of a specific plant installation where a 50-50 mixture of anthracite and bituminous coal have been used for years, it might be well to outline some of the properties of anthracite coal.

There are three classifications for anthracite coal with the classifications being based on the amount of fixed carbon and the amount of volatile matter. They are as follows:

Classification	Fixed Carbon Percent	Volatile Matter Percent
1. Meta-Anthracite	98 or more	2.0 or less
2. Anthracite	92 to 98	8 to 2
3. Semi-Anthracite	86 to 92	14 to 8

As a comparison, for bituminous coals, there are five standard classifications as follows:

Classification	Fixed Carbon Percent	Volatile Matter Percent
1. Low volatile	78 to 86	22 to 14
2. Medium volatile	69 to 78	31 to 22
3. High volatile "A"	Less than 69	More than 31
4. High volatile "B" coals have a moist B.t.u. of 13,000 or more, but less than 14,000		
5. High volatile "C" have moist B.t.u. of 11,000 or more than 13,000		

Lower B.t.u. coals are the subbituminous, lignite, and brown coals and they range from 11,000 to 8300 moist B.t.u. content

From the Anthracite Institute and U. S. Bureau of Mines comes this approximate analysis of Pennsylvania anthracite, for the finer sizes, on a dry basis, as follows (average 268 samples from 41 breakers):

	Rice	Barley
Volatile	4.5 percent	4.4 percent
Fixed carbon	83.1 percent	82.0 percent
Ash	12.4 percent	13.6 percent
Sulphur	0.7 percent	0.7 percent
Heat value, dry	13,080 B.t.u.	12,890 B.t.u.
Heat value, moist free	14,930 B.t.u.	14,920 B.t.u.
Softening temp. of ash	2900 deg. F.	2880 deg. F.
Moisture, as received	5.7 percent	7.2 percent

It will be interesting to note that the heat value of the damp material as received for these two sizes was 12,300 and 11,980 B.t.u. respectively.

It will be noted from the following tabulation that the differences in ignition temperatures for the three grades of coal given is relatively small:

	Ignition temp. deg. F.
Anthracite	925
Semi-bituminous	870
Bituminous	766

Anthracite coal has a sp. gr. of 1.47 to 1.60, compared to bituminous coal which has a sp. gr. of 1.30 to 1.40.

Volatile matter in anthracite coal is that portion of the coal which is

driven off as a gas before the coal starts to burn and consists chiefly of hydrogen and methane. The hydrogen content of the evolved gas will range from 78 to 85 percent, carbon monoxide accounts for about 5 percent, and CH_4 from 2 to 6 percent. A ton of anthracite will give off 4500 cu. ft. of hydrogen under average conditions.

If a volumetric analysis is made, the volume of gas given off for the temperatures indicated is roughly as follows:

70-335 deg. F. (cc) from 50 cc of 10 x 16 m. coal	72 parts
335-1120 deg. F.	330 parts
1120-1895 deg. F.	7520 parts

Pea, and the smaller sizes of coal, weigh 49.5 to 60.6 lb. per cu. ft. The volume of ash from a ton of this type of coal is from 9 to 12 cu. ft. and one cu. ft. of ash will weigh from 25 to 45 lb., as the type of ash (clinker or fines) and the efficiency at which the coal is burned will determine the amount of unburned material and results in wide volumetric changes. The percentage of ash in the coal is also a factor.

Cement Plant Experience

At several portland cement plants which we visited, the use of anthracite was still in the experimental stages. Some had tried using 100 percent anthracite, but mainly because of the type of equipment available, the coal was not readily adaptable and the flame would go out at times. Those using anthracite coal were confining their efforts to a blend. One with a duplicate grinding system, i.e., one for anthracite and one for bituminous, had used as high as a 60-40 mix (anthracite-bituminous), but most who had tried the blend were sticking to a 50-50 mix.

When a unit drying and pulverizing system is used the necessity of having a good thorough mix was emphasized. The experiments on mixing ranged from efforts to mix with a conventional shovel to highly mechanized systems. An uneven mix of the two coals results in the flame puffing when alternate slugs of fine anthracite and bituminous hit the burner tip. A lime plant, using rotary kilns, also tried burning the mix, but due to uneven mixing, puffing resulted even to the extent of the flame going out entirely. One of the portland cement manufacturers was planning on installing two poidometers so as to insure an accurate blend of the two coals, followed by adequate mixing.

One operator pre-dried and pre-ground the two coals separately in tube mills, mixing the two products later in a spiral conveyor. The operation was so conducted that the volatile matter in the final mix was held at 25 percent.

Allentown Portland Cement Co., at its Evansville plant, near Reading, Penn., receives bituminous coal in bottom dump cars. This coal has a volatile content in the 40 percent range. The anthracite coal, from a river dredging operation, is received at the plant in trucks and is dumped to ground storage to allow it to drain. It is then transferred to another truck hopper by a Traxcavator. The trucks can dump direct to this hopper if desired. It is protected by a suitable grizzly.

Under these two hoppers are two parallel screw conveyors each driven by a variable speed motor so that the two products can be delivered in predetermined amounts to a single bucket elevator. This is the start of the mixing operation. The bucket elevator discharges to a conveyor which in turn serves a cross-screw conveyor over the inside storage pile which holds about 2500 tons of coal. At one end of this coal storage pile is another bucket elevator that serves a conveyor and the two Fuller-Lehigh rotary dryers. These are hand fired and are each 4 ft. 6 in. dia. x 30 ft. long. When necessary, the Traxcavator can bulldoze the coal towards the boot of the bucket elevator. In this manner the coal receives a reasonable good mix enroute from the track hoppers to the dryers. The coal going to the dryers has a moisture content of about 5 percent.

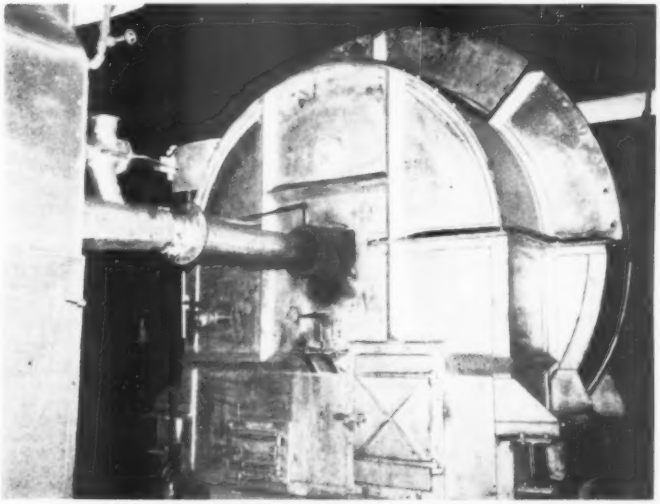
The dried coal is pulverized in three, 42-in. Fuller-Lehigh mills. Each has four, forged steel balls, 12½ in. dia. and each mill is powered by a 75-hp motor. The mills are equipped with 40-mesh screens. A Fuller-Kinyon pump delivers the pulverized coal to small steel bins ahead of each kiln.

It is interesting to note that since the anthracite coal has been mixed with bituminous coal ahead of the inside storage, no trouble has been experienced from coal fires in the pile.

About two years ago the 8- x 120-ft. kilns were lengthened and Fuller coolers installed, and due to other plant changes since then, it is difficult to get a comparison of kiln production between a straight bituminous coal and the mixture. Installing the Fuller coolers and lengthening the kiln increased production materially. It was indicated by Marshal Hunt, Jr., plant engineer at Evansville, that the life of the brick lining was not shortened by the use of the anthracite mixture.

Before the installation of the Fuller coolers the air had little pre-heat and the flame produced by the mix extended the burning zone towards the rear of the kiln. After the coolers were added the flame moved back towards the front of the kiln and the intense heat caused coking troubles in the burner tube. To correct this, the burners on the kilns have been provided with a water cooling jacket, which obstructed the flow of coal somewhat. According to superintendent P. B. Meyers at Evansville, they found it to be advantageous to have the long axis of the burner tube about parallel with the long axis of the kiln, with the burner assembly below the center of the kiln. These operators have found it difficult to raise the percentage of anthracite in the mix, mainly because of lack of coal grinding capacity. We are indebted to operating manager A. E. Douglass, Jr., for permission to visit this operation.

(Continued on page 85)



Water jacket on hot end of burner pipe prevents coking of the anthracite—bituminous coal mixture at the Evansville plant of Allentown Portland Cement Co.

Determining A New Power Factor

When an electrical motor is to be added to an existing plant, the accompanying chart offers an easy and quick method for solving the variables encountered

By GLENN STRANGLAND

WHEN A LARGE ELECTRIC MOTOR is to be added to a plant where the power factor is already low, it may be desirable to select a synchronous motor or to install capacitors if an induction motor is to be used. By using the chart herewith, final power factors after the change can be predicted or what the power factor of the added motor must be in order to adjust final power factor to the desired value for the most favorable power billing can be found.

By knowing any two of the four variables—kw., kv.a., kv.a.r. or p.f.—for both original load and added load, p.f. can be found by using the diagram in this way:

Example 1: A plant carries 790 kw. at 1000 kv.a. Working in the plant quadrant, mark point A at the intersection of a vertical from 7.9 on the original load kw. scale with the 10 load kv.a. circle. The synchronous motor to be added is rated 0.8 p.f., 90 percent efficiency, 300 hp. (250 kw.). Working in the synchronous motor quadrant, mark point B at the intersection of a vertical from 2.5 on the

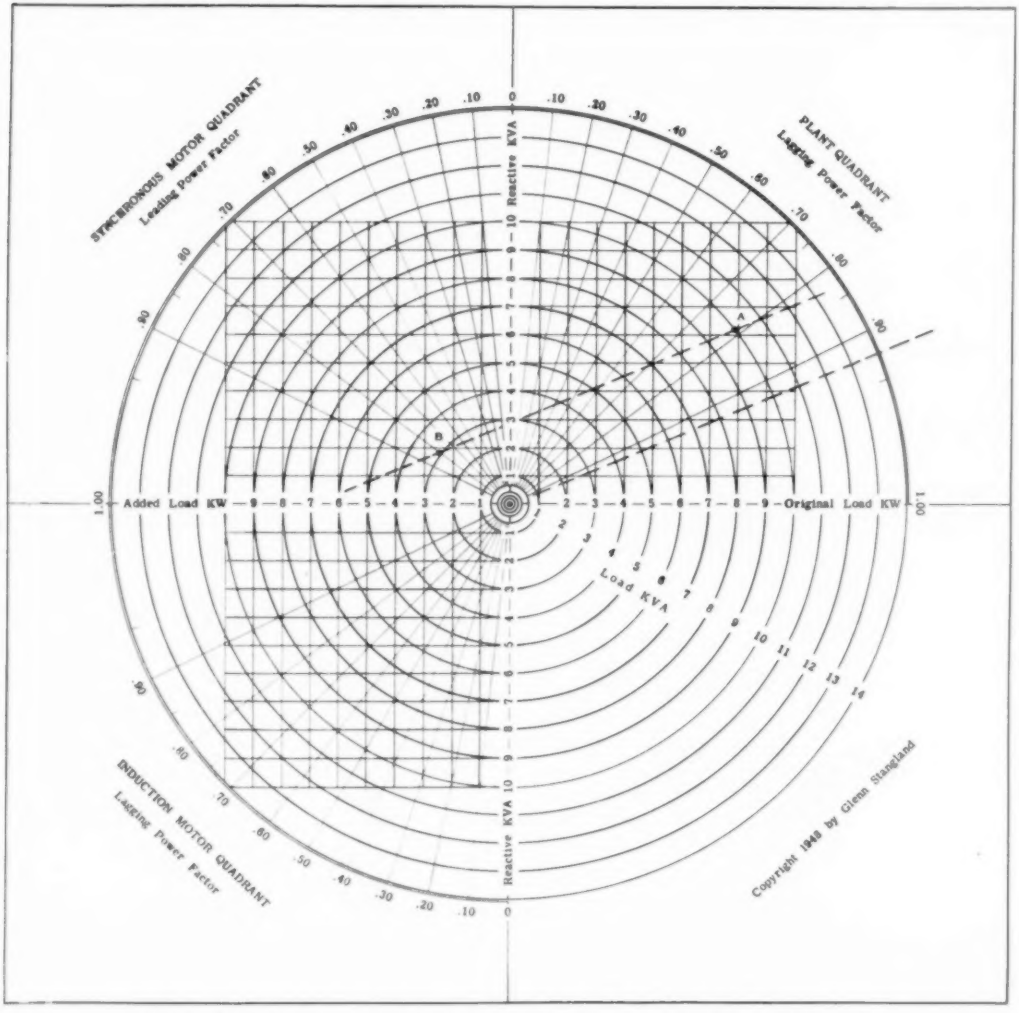


Chart for determining a new power factor when an electrical motor is to be added to an existing plant

added load kw. scale with the 0.8 p.f. radial line. The final power factor of the plant is found in this manner. Draw one dashed line from A to B, parallel to it and through the bullseye. Draw another dashed line to solve for 0.92 lagging as final value of plant p.f.

The power factor of the added load needed to raise plant p.f. to the desired value is found thusly:

Example 2: A plant carries 790 kw. at 1000 kv.a. Working in the plant quadrant, mark point A at the intersection of a vertical from 7.9 on the original load kw. scale with the 10 load kv.a. circle. Final power factor of the plant is to be 0.92. Working in the plant quadrant, draw the dashed line through the bullseye and 0.92 p.f. To find what p.f. of a 300 hp., 90 percent efficiency synchronous motor must be: parallel with the first dashed line and through point A, draw another dashed line. Where it intersects a vertical from 2.5 added load kw. in the synchronous motor quadrant, mark point B. A radial through B solves for 0.8 p.f. leading as the required power factor rating of the new motor.

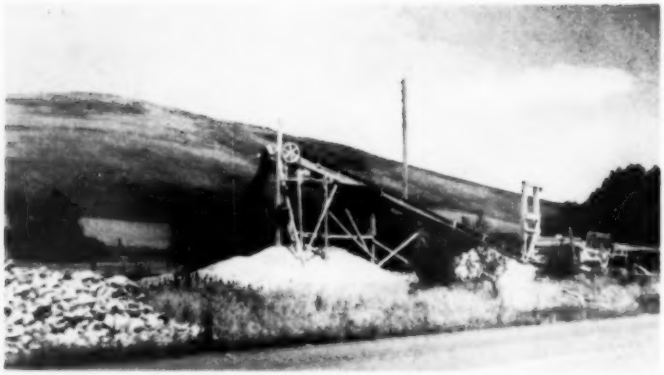
Other values: Note in both examples that point A shows original plant kv.a.r. to be 615 (lagging) and that a radial through point A shows original plant p.f. to be 0.79 (lagging). Likewise, point B has the four characteristics kw., kv.a., kv.a.r. and p.f. any two of which will locate the point.

Other loads: When the added load has lagging power factor, work in the induction motor quadrant. When added load is a capacitor, work along the upper reactive kv.a. scale. When the added load is pure resistance, work along the lefthand kw. scale.

Seven-mile Conveyor Transports Aggregate

TRANSPORTATION of aggregate for concrete is one of the outstanding features in the construction of the $58,000,000 Bull Shoals Dam on the White river near Flippin, Ark. The aggregate is transported seven miles from Lee's mountain, behind Flippin, on a compounded rubber and cotton fabric conveyor belt, 30 in. wide, furnished by Goodyear. Consisting of 21 flights, the belt delivers 650 tons of crushed stone per hour to the dam site. It is estimated that some 4,000,000 tons of aggregate will be transported from the quarry to the stockpiles via this belt before the dam is completed in December, 1950.

Top: Bull Shoals Dam site as seen from observation platform across White river. Group of buildings on top of bank and steel frame are aggregate plant and trestle for the dam, respectively. Discharge-end of seven-mile belt conveyor is at right of aggregate plant
Center: Last section of seven-mile conveyor system shown in foreground. Note aggregate ladders at discharge end of conveyor belts
Bottom: One of several screening plants in operation at the dam project



Loading railroad cars at the company's spur track, a 6-mile haul from the crushing plant

Process Limestone For Smelting, Sugar Beet and Paper Industries

LEWISTON LIME CO., Lewiston, Idaho, has expanded operations so that it now is shipping 50 to 60 tons of limestone per hr. from its quarry and plant located along Mission Creek, six miles by truck from the railroad at Jacque's Spur, and 27 miles from Lewiston. The operation has been in existence four years and recently improvements were made which included installation of a rotary sizing screen. The quarry produces a high calcium limestone that finds use in the sugar refining industry, in the paper mills, and as flux stone for the copper and lead smelters in the surrounding area.

The quarry is located on the side of a steep mountain and operates from a single bench about 150 ft. high. Vast tonnages of limestone are available. Drilling is done by Sullivan air drills (including a wagon drill), and a Sullivan electric compressor is available. Loading is done by a 1- cu. yd. Bucyrus-Erie shovel which has been transposed over to electric drive. The shovel delivers to trucks that haul the rock a short distance to a hopper over a 36-in. by 12-ft. Telsmith pan feeder that serves a 24- by 36-in. Lippman jaw crusher set to give a 9-in. discharge. This material falls to a horizontal 36-in. belt conveyor that delivers to a rotary grizzly. The oversize from the grizzly is plus 5 in. and is shipped for pulp rock. The undersize falls to a 3-deck dry, 4- by 12-ft. Lippman vibrating screen that has 4½-in., 2-in., and 3/16-in. decks top to bottom respectively. The oversize falls to an Austin gyratory crusher that in turn delivers to a small rotary screen. The feed end section of this screen has ¼-in. openings and the discharge end section has 1-in. openings. The ¼-in. minus and 1-in. plus stone goes to smelter; ¼-in. x 1-in. size goes to Weyerhaeuser Timber Co. for use in the pulp mill.

Rotary grizzly that removes large stone for sale to pulp mills

Returning to the 3-deck screen: the minus 4½-in., plus 2-in. material is shipped to the sugar refineries, and the minus 2-in., plus 3/16-in. material is sold to the smelters. The fines from the lower screen are wasted, however, the amount of material is small.

The limestone is hauled to the company's belt conveyor loading unit at Jacques Spur where the material is loaded to gondolas for shipment on the rails of the Union Pacific Railroad. The six mile road is macadam.

The offices of the company are in Lewiston at the home of D. L. Rolph, who is general superintendent. The company is owned by Hemphill Bros., Inc., of Seattle, Wash.

Lower end of the screening and crushing plant

Polish Cement

THIRTEEN CEMENT PLANTS operate in Poland, with an estimated production for 1947 of 1,450,000 metric tons, *Mineral Trade Notes* reports. Output in 1946 was 1,300,000 tons. The average annual output for 1933-37 was 863,000 tons. Under the 3-year economic plan of the Polish government, production for 1948 was expected to be 1,600,000 tons. Production in 1949 is expected to reach 2,000,000 metric tons. Estimated exports for 1947 amounted to 50,000 tons. The average annual exports for 1933-37 amounted to 85,000 tons. It is proposed to build a new cement plant at Opole, Lower Silesia, which will have a capacity of 350,000 to 400,000 metric tons per year, and be completed in 1950.

Jamaican Gypsum

ALCOA STEAMSHIP CO. reports that full-scale gypsum mining has begun near Kingston, Jamaica, promising to become one of the island's major industries. Most of the materials produced will be used by the Jamaica Bellrock Co. which makes a building panel basically of gypsum.

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Mica Schist

Special Purpose Crushed Stone

Mica schist produced in suburban Philadelphia in great demand for refractory purposes—also for building stone

By THOMAS H. WITTKORN

A QUARRY which supplies 25,000 tons of high-grade mica schist annually for industrial purposes and more than twice that amount of building stone is the Firestone Products Co. operation located in the heart of a high class residential section of suburban Philadelphia at Glenside, Montgomery County, Penn. Operated since 1933 as the Firestone Products Co., the firm formerly was known as the Edge Hill Stone and Construction Co. which was developed by Harvey B. Sines. Charles A. Sines, son of the founder, now is general manager, secretary and treasurer of the company, and has kept the operation up-to-date with the introduction of modern methods and equipment. Thirty men are employed at present in the quarry and at the crushing plant. The firm has just started to open a new slope which will require the moving of 25,000 cu. yd. of material, but which will allow operations to proceed to an approximate 100-ft. level.

All of the quarry equipment is operated by electric or gasoline power. An Ingersoll-Rand drill is supplied air by an Ingersoll-Rand No. K160 compressor which is mounted on a Chevrolet truck chassis. Blast holes generally are drilled to a depth of 12 ft. with the natural cleavage of the rock being an aid to efficient breakage.

Four gasoline-powered shovels are operated in the quarry. Usually four men are required at each shovel to load selected slabs of stone onto "trays" which are lifted by the shovels and dumped into trucks for haulage to the surface 70 ft. above. Five of the dump trucks are Internationals and one is a Mack. One of the newest pieces of equipment is a Model 307¾-cu. yd. General gasoline shovel which, according to the operator, has proven to be much faster in loading than the shovels formerly operated.

Rail shipments are made from a private siding on the main line of the Reading railroad between Philadelphia and Bethlehem, Penn., less than one-half mile from the quarry. Six 70-ton cars can be accommodated at one time and three of them can be loaded simultaneously by dump truck from the concrete ramp.

The crushing plant, which is electrically driven, has a capacity of 100 t.p.d. and is located on the highway, producing a high-type sand and grits. These products have an analysis of 96.6 silica, 1.4 percent aluminum and 1.12 percent iron oxide and are used in the iron and steel industry. Rail shipments are made in box cars during the winter when burlap bags are used to carry 150 lb. The largest tonnage is transported in open cars from the railroad siding although some customers take sand and grits direct from the crusher in their own motor trucks.

Six-ton truck loads are hauled ten miles by the quarry's trucks to the R. C. Remmey and Son Co., Philadelphia, Penn., for the manufacture of firebrick. The brick then are sold by the sales organization of the Firestone Co. As a refractory in electric furnaces, sand and grits from the crushing plant have withstood 1900 heatings before replacement was needed.

The ridge in which this valuable stone is found extends three miles to the east of the quarry and four miles to the west, but depth has not been determined. A deep railroad cut through it was one of the original factors in deciding to open it. While mica schist is obtainable over the entire length of the ridge, the finest quality stone, a Cambrian sandsone, is found for a length of two miles centering at Edge Hill, one of the early towns on a turnpike leading from "Up-country" to Philadelphia. Because of the large number of homes which have occupied the ridge for many years there is only about one half mile of it that will ever be quarried.

The Firestone Co. owns fifteen acres with a vein of rock 900 ft. long and approximately 400 ft. thick. The quarry, as now operated, covers nine acres with both hard and soft strata of various widths running through it. One 75-ft. vein of very hard texture was used only as building stone until its analysis was known, and now is in large demand as a lining for cupolas, lime kilns, small converters, incinera-

Mica schist ridge in quarry of Firestone Products Co. Charles A. Sines, general manager and son of the founder, is second from left

Lower level of quarry, showing two of four gasoline-driven shovels

Crushing and screening plant with a capacity output of 100 t.p.d.

tors, etc., where it does not have to withstand a temperature of more than 2800 deg. F.

It is the softstone vein, averaging 100 ft. in thickness, which has the highest silica content. A large number of the steel companies in the United States and Canada with Bessemer converters, large ladles or hot metal mixers use this material as a lining. Lime kiln users are said to report a lining of it will last from seven to ten years.

New Sand and Gravel Plant in Texas

CAVER & LOCKWOOD, a new sand and gravel plant at Atlanta, Texas, is supplying aggregate to local builders to meet demands of a regional construction boom. The company processes the output of a number of local gravel-dredging operators at its washing and screening plant on the outskirts of Texarkana, and sells specification materials to contractors within a radius of 75 miles.

The plant, a Pioneer 305-W, is powered by an International U-4 carbureted engine, and consists of a 70-ft. by 18-in. belt conveyor, 32-in. chain dehydrator, 4-ft. scrubber, circular 42-in. x 16-ft. revolving screen, a 24-in. mechanical feeder with a 4- x 4-ft. hopper, and two 21-cu. yd. bins.

Water requirements are met by an International UD-9 diesel engine, pulling a 6-in. Deming Mueller centrifugal pump. Water is taken from a canal extension that has been built to a nearby creek by the firm. From the canal, water is pumped 300 ft. and through a 20-ft. vertical lift to the washer which uses from 300-500 g.p.m. under 50 lb. pressure.

According to John R. Caver, partner, the plant produces an average of 500-cu. yd. sand, and gravel from ¾- to 2-in. size, per 10-hr. day. The company uses a fleet of four International trucks to deliver the aggregate. The firm also will supply aggregate for Sulphur River dam now under construction near Atlanta.

Colorado Fluorspar

FLUORITE of a mineable grade was found in 10 of 13 diamond-drill holes bored in three fluorspar veins near Jamestown, Colo., according to report of Investigations 4483, "Investigation of Jamestown Fluorite Deposits, Boulder County, Colo.," just released by the Bureau of Mines. The report describes results of an investigation conducted between December, 1945, and April, 1947, and includes a geologic map of the area, a map showing topography and underground workings, drill logs and tables of sample analyses. Free copies of the report may be obtained from the Bureau Publications Distribution Section, 4800 Forbes St., Pittsburgh, Penn.

New Hampshire Mica

BUREAU OF MINES has released Report of Investigations 4410, "Investigation of Big Mica Mine, Cheshire County, N. H.," and Report of Investigations 4409, "Investigation of Blister Mica Mine, Cheshire County, N. H.," both of which may be obtained from the Bureau publications section. Detailed descriptions of the testing processes are given in the reports.

New sand and gravel washing and screening plant of Caver & Lockwood, Atlanta, Texas. Capacity is 500 cu. yd. of sand, and gravel from ¾- to 2-in. size per 10-hr. day

Infra-Red Ray Lamps Used In Screw Type Tungsten Dryer

INFRA-RED RAY LAMPS are being used successfully by the Tungsten Mining Corp., Henderson, N. C., as the heating element in a screw-type dryer. The possible application of this type of dryer, with its apparent advantages, might well be considered by management of the rock products industries where a drying problem is encountered. This article describes the installation and gives a breakdown of costs of operation.

Highlighting operation of the units is their extreme simplicity, their relatively low installation cost, the small amount of floor space occupied and the complete absence of dust in the operation. Other factors that enter the use of infra-red ray drying of the type herein described include a very high degree of control possible with these units that enables drying to be accomplished without undue oxidation or reduction reactions.

There is no possible chance of contamination due to smoke, oil fumes, coal dust, etc., as might be the case in other types of dryers. With stainless steel equipment it might well be used to dry products that are apt to be contaminated by rust from the metal operating parts. The idea of a few infra-red heater lights could be used for laboratory dryers. A word of caution might be injected here, for the operators recommend it for granular materials as the operating costs, on a tonnage basis, are high.

Tungsten Mining Corp., the second largest tungsten producer in the United States, went into the subject of this type of dryer because its table and jig concentrates consist of a mixture of scheelite, hubnerite, pyrite and other sulphides, attriturated iron, and some gangue material. These concentrates, after drying in the infra-red dryer, are treated on a large Dings magnetic separator, and if any oxidation of the sulphide content took place while the products were being dried, this oxidation would upset the magnetic operation very seriously, and the operators would not be able to make a concentrate to meet specifications.

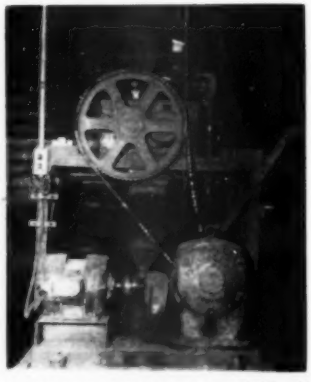
If sunlight is passed through a prism under certain conditions, the light waves are separated according to their wave lengths. The longer waves of light on one end of the spectrum are the invisible infra-red rays and such rays are essentially heat rays with considerable penetrating powers. At this operation, source of the infra-red rays are specially designed, General Electric Co. light globes.

At the outset the company used a 250-watt light of soft glass mounted over a Simplex screw conveyor; but it was soon found that two things happened: (1) the globes broke mostly from cooling and heating, and (2) capacity of the screw conveyor decreased as the load dried. As no special feeder is used to supply the screw, it must act as its own feeder. The operators reduced the diameter of the feed end of the screw to about 1½ in. tapering it down from 6 in. at the discharge end, so that when the wet concentrates were dumped into that screw, the small diameter fed a relatively small amount.

After trying the 250-watt lights, 375-watt lamps of soft glass were tried and the lights left burning, for the turning on and off of the lights, with resulting heating and cooling accounted for some of the high breakage. At that time the breakage costs were higher than the power costs.

Engineers of the General Electric Co. developed a 375-watt, hard glass lamp for the dryer that has reduced the breakage problem to a minor item. These are described as G. D., clear glass, reflector type, R-40, heat resisting glass, 375-watt, 120 volts, infra-red lamps.

In the plant are two separate dryers. The newer one is about one year old and will be described first. It is a 6-in. dia. double screw conveyor with an over-all length of 24 ft. 6 in., and with a 20-ft. 6-in. length of screw. Effective drying length is 19¼ ft. It operates at 1¼ r.p.m. through a 1-hp. Allis-Chalmers motor and a Link Belt speed reducer. Above the screws are porcelain receptacles for 66 lamps that are spaced on 7-in. centers. These lamps can be raised or lowered by a suitable arrangement, and operate



Power for one of the dryers is provided by this 2-hp. motor, operating through a geared speed reducer

Infra-red light dryers in operation. Note small amount of floor space required by each machine

normally about ½ in. above the screws. The unit is drying an unclassified table concentrate of minus 0.07-in. size that contains 6 percent water. The discharge product has from 0.00 to 0.05 percent water content. It has a capacity of 7000 lb. per 24 hr. and actually uses only 46 lamps. It was said that the capacity of the unit could be increased 43 percent by using more lamps and speeding up the screw conveyors.

The second set of dryers treats a ⅛-in. unclassified jig product and consists of two shorter Simplex screws with one mounted above the other. This permits smaller floor space requirements. The two screws operate at 180 deg. of each other and are each 11-ft. over-all length with 19¼ ft. of effective length. The top screw operates at 1 r.p.m. and the bottom at 2 r.p.m. and this unit has a capacity of 6000 lb. per 24 hr. using 34 of the 375 watt lights. Feed has about 5 percent water content. It dries to 0.02 percent to 0.00 water content.

Power cost for the lights is 36c per hr. Power to drive the units costs 3.5c per hr. Lamps cost $30 per month to replace, with all costs (including labor) estimated at $1.85 per ton.

H. S. West is president of Tungsten Mining Corp.; J. R. Sweet, general manager; George M. Brown, general superintendent; J. T. Hanvey, mill superintendent; R. M. Richmond, mine superintendent; A. M. Szynklewski chief mining engineer; and John V. Hamme, metallurgist.

Asbestos-Cement Board for Exterior Siding

THE ASBESTOS CEMENT PRODUCTS ASSOCIATION reports that asbestos cement board, which has been used successfully for interior walls and certain utility purposes, now is being applied successfully as an exterior siding for new homes.

Sand and Gravel Plant

LAMAR CONCRETE PRODUCTS CO. has set up a sand and gravel plant on a river near Lamar, Colo., Ezra Wade, owner, reports. Sand is excavated by a dragline and drawn by cable to the plant, where it is washed, graded, and crushed if necessary.

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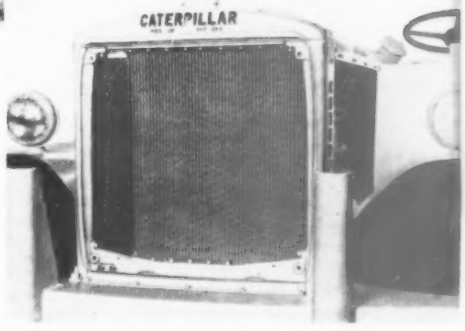

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Crushed Stone Association Summer Directors' Meeting

RESEARCH PROBLEMS of the crushed stone industry high-lighted the annual mid-summer meeting of the board of directors of the National Crushed Stone Association at the Greenbrier hotel, White Sulphur Springs, W. Va., July 21. In addition to routine reports, the board took action on changes in the by-laws of the Agricultural Limestone Institute dealing with various types of membership. As a division of the National Crushed Stone Association it was necessary for these changes to be approved by the Association's board of directors, which was done.

Future Meetings

The next annual convention of the Association will be in January, 1950, in Chicago at the Stevens hotel, as was decided some time ago. The board of directors' mid-summer meeting in 1950 will be July 6 at the Homestead hotel, Hot Springs, Va. The 1951 convention of the Association will be in Cincinnati, Ohio, at the Netherland-Plaza hotel, the first week in February. The 1952 convention will be held again at the Stevens hotel in Chicago, if the 1950 experience there justifies that selection. The 1950 and 1952 conventions are those held in adjacent weeks with the National Sand and Gravel Association in order to provide an exhibit of machinery and equipment. The Stevens hotel is said to have the largest and best facilities for that kind of a hotel exhibit to be found anywhere. The date of the 1952 convention will be late February or early March, if it is held in Chicago. The time and place of the 1953 convention was left to the executive committee of the board.

Progress in Research

A. T. Goldbeck, engineering director, submitted a progress report on his research work, which includes an investigation of the causes of extensive cracking in some concrete highway pavements, apparently as a result of excessive expansion. He said in part: "Sometimes this disintegration may take place in only a few years of service. Stone alone is not involved but gravel, also, and slag may not be immune. These expansion troubles have been blamed on the coarse aggregate in some cases; in others, the combination of the coarse aggregate with particular sands and particular cements seems to lead to faulty concrete. The cause of this excessive expansion is not always clear because of the several possible influences which may have a combined effect.

"In the past mention has been made of 'chemical reactivity.' That, in general, means that there is a chemical reaction between certain compounds in the cement such as sodium and potassium salts, with certain forms of silica in the aggregate, prominent among which is the mineral Opal, an amorphous hydrated silica having no crystal form and containing water up to as high as 20 percent. Apparently silica in this form readily combines with sodium oxide or potassium oxide and an alkali silicate, or common ordinary water-glass, such as used as an egg preserver, is formed and internal pressure is developed within the concrete which, if severe enough, results in expansion and ultimate cracking.

"Then, too, certain clay minerals which expand excessively may exist in certain limestones. Likewise, the size and shape of the pores in the stone seem to be important for these pores have great influence on the amount of water a stone can absorb. Some stones can become completely saturated with water and since ice has about 11 percent higher volume than water, when this water freezes in the pores, it exerts tremendous internal pressure and disrupts the stone and the concrete. Other stones, because of their nature —the shape and size of the pores— never become completely saturated, void spaces remain into which the freezing water can expand, and no harm is done.

"Cements are partly to blame for these expansion phenomena. There are indications that high alkali cements having over say 0.6 percent of sodium and potassium oxides may cause serious trouble with aggregates of certain types and furthermore, high magnesia in cements is under suspicion and has caused expansion trouble in the past.

"Sometimes it has seemed as if no one of these troublesome agents is alone sufficient to cause disintegration but perhaps their combined effect may be severe enough to destroy the concrete. The entire problem is complicated and is the subject of investigation by several prominent research agencies.

"The N.C.S.A. laboratory is undertaking this investigation of expanding concrete at the request of several companies whose product is under suspicion. The method of attacking this problem is somewhat too complicated for discussion at present. Briefly, however, if the stone expands excessively when completely saturated, it may not when the voids are only partly filled with water and, if this is so, then a change in pavement design or in concrete design holds promise of overcoming the expansion trouble."

Other research projects include the determination of particle shape of stone sand and its effect on the saleability for fine aggregate for concrete; a study of a commercially produced bituminous concrete; coöperative tests with other laboratories on the Los Angeles abrasion test; effects of dusty coarse aggregate.

Mr. Goldbeck again emphasized the desirability of a much expanded research staff and other projects that need attention; there should be a research budget of at least $100,000 a year, and the industry would seem amply able to support it. During the year the Association lost the services of Phillip C. Clarke, laboratory engineer, and acquired a new research engineer, James M. Rice, recently connected with the joint research project of the Indiana State Highway Department and Purdue University.

Field Work

Joseph E. Gray, field engineer, described his activities of the past six months, during which he has helped producer members on both promotion and production problems. Some of these involve the use of crushed stone sand for fine aggregate, where he has found prejudices in places because of previous experience with ungraded screenings.

Construction Outlook

J. R. Boyd, administrative director, foresaw a large scale, long range public construction program with particular emphasis on highway reconstruction. The outlook for 1949, he said, is for a total construction program, public and private, of about $19 billion, a new all-time record.

Convention Program

A good deal of the around-the-table discussion was about details of the convention programs, with particular reference to the 1950 one in Chicago, when there will be an exhibit by the Manufacturers' Division. Otho M. Graves, past-president, reported arrangements already made, as chairman of the convention committee. There will be, as usual, one afternoon set aside solely for the purpose of inspecting the exhibit, except that it is proposed to hold a session for salesmen on that afternoon, on the theory, apparently, that the salesmen are not interested in production machinery and processing. There will be a half-day operating session, in which the members of the Manufacturers' Division will participate, as usual. There was some doubt expressed whether a half-day session was sufficient an attraction to bring out the operating men in the numbers the exhibitors would like to see.

Limestone Institute

H. C. KRAUSE, reported as the director representing the Agricultural

Continued on page 84

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Limestone Institute. After detailing progress being made, he presented a proposition to have the National Crushed Stone Association turn over to the Agricultural Limestone Institute 20 percent of the dues received from associate members (the Manufacturers' Division) and 20 percent of the net revenue from the sale of exhibit space. After considerable debate, pro and con, mostly pro, the Board of the National Crushed Stone Association voted to do this.

Cottrell Farrell, representing the Manufacturers' Division, reported progress, but expressed the intention of making a special drive for new members.

Active Membership

G. A. Austin, past-president, reported as chairman of the membership committee. There followed quite a debate between Messrs. Austin and Graves as to the effectiveness vs. the effective use by members, of the newly published booklet describing the advantages of membership in the Association.

Registration

W. S. Weston, Jr., president, presided and did a fine job. The directors present, in addition to the president, were: G. A. Austin, L. J. Boxley, J. Reid Callanan, Bruce S. Campbell, W. N. Carter, Arthur F. Eggleston, Wilson P. Foss, III, Otho M. Graves, Norman E. Kelb, H. C. Krause, R. T. Lassiter, G. D. Lott, Jr., A. W. McThenia, V. C. Morgan, John H. Odenbach, H. E. Rainer, James Savage, F. W. Schmidt, Jr., W. H. Wallace, D. L. Williams, W. F. Wise, A. L. Worthen, P. E. Heim, Cottrell Farrell, R. C. Johnson, J. B. Terbell; honorary members: F. O. Earnshaw, J. A. Rigg, H. E. Rodes, Stirling Tomkins; guests: Nathan C. Rockwood, Irwin F. Deister.

Production and Coloring of Cast Stone Safety Trophies

ROCK PRODUCTS presents two safety trophies each year to the sand and gravel plant having the lowest accident frequency rate in the contest sponsored by the National Sand and Gravel Association from figures compiled by the National Bureau of Mines. Awards are made in two classifications: plants working more than 100,000 man hours per calendar year and plants working less than that number. Winners of the trophies last year were the Memphis, Tenn., plant of Marquette Cement Manufacturing Co., Chicago, Ill.; and the Crystal City, Mo., plant of Pittsburgh Plate Glass Co., Pittsburgh, Penn.

Concrete slabs from which these trophies are made are fabricated by a company that specializes in cast stone. In order to obtain the desired over-all color, granite aggregate and manufactured granite sand are used exclusively, with different sources for the various colors. Principal suppliers are quarries in Wisconsin and North Carolina. After the slabs are cured, they are taken to a second plant for application of the lettering and design.

Feature of these trophies is a reproduction, in color, of the winning plant. An artist, working from photographs, makes drawings of the plant that show the various colors and gradations. These drawings are transferred to a rubber mask that has been cemented to the plaque and the darker areas and the lettering cut out, preparatory to sand blasting the design. After the plaque has been sand blasted to approximately ⅛-in. depth, the mask is removed and the color applied by hand to the required zones. Colors are made from mineral pigments that are held in suspension in a special liquid until applied.

Mine Accident Analysis

BUREAU OF MINES has released "Safety in the Mining Industry," a 157-page study that discusses the causes and prevention of accidents in all branches of the mining industry. For each branch of mining, statistics showing long-term trends in accident rates are presented and interpreted. The principal causes of mine fatalities are discussed together with progress that has been made toward alleviating them, and suggestions for further efforts. The text is supplemented by 86 statistical tables and 29 charts dealing with production, employment, and accident rates.

Bentonite Production

PRODUCTION OF BENTONITE in 1948 rose to 920,566 short tons, valued at $7,119,607, according to reports of producers to the Bureau of Mines. This was an increase of 21 percent in tonnage over 1947. As recently as 1938 output totaled less than 200,000 tons per year, compared with 1948. Bentonite, as in previous years, found its largest outlet in the foundry and petroleum industries — foundry sand bond, 228,799 tons; filtering and decolorizing oils, 291,349 tons; and rotary drilling mud, 329,752 tons—or 92 percent of the total tonnage.

Alaska Cement Plant

A BILL has been introduced to Congress to authorize construction of a cement plant in Alaska.

Concrete plaques made with special granite aggregate and manufactured granite sand awarded at last year's N.S.G.A. convention, held in New York

Fuel Economy

(Continued from page 73)

F. H. Compton is general superintendent for both the company plants.

In the July 9, 1949, issue of *Saturday Evening Post* is an article relating to the cleaning up of the Schuylkill river and the author points out that to make it a flowing stream again, some 40,000,000 tons of silt will have to be dredged from the stream bed. This silt, he points out, is largely anthracite coal fines, and the State of Pennsylvania expects to defray part of the cost of the dredging operation through sale of this material for combustion purposes. Here may be a cheap source of fuel, for disposing of 40,000,000 tons of dredged material is no small problem in itself.

Crushing

(Continued from page 67)

service of this 4½-mile haul. The remaining trucks in the fleet are used to haul material to the various zones in Los Angeles County.

The minus 1-in. crushed stone falls to a stockpile that is built over a tunnel in which a 24-in. reclaiming belt operates. A D8 Caterpillar and dozer pushes the material to the openings in the tunnel as required.

The Livingston Truck & Materials Co. is operated as a partnership by Carder B. Livingston, president; A. E. Murphy and H. F. Murphy. E. B. Cox is shop superintendent with Roy Blower as plant superintendent.

Safety Awards Won by Alpha Cement Plant

ALPHA PORTLAND CEMENT CO., Easton, Penn., has been presented with the "Sentinels of Safety" trophy for operating the Ironton limestone mine, Ironton, Ohio, without a lost-time accident from April, 1944, to March, 1949, with an average of 70 employes working 562,630 man-hours in a 100 percent mechanized mine. The presentation was made at a dinner held in the mines for company officials, employes and guests.

The Ironton mine is a charter member of the National Safety Competition having been enrolled in each of the 24 annual contests. During that period it has had 15 injury-free years and has won the Sentinels of Safety trophy two other years in 1928 and again in 1942. The Joseph A. Holmes Safety Awards also were presented. John J. Davis is superintendent of the Ironton operation, and Dan Handley is mine foreman.

A.C.I. Regional Meeting

THE BOARD OF DIRECTION of the American Concrete Institute has scheduled a regional meeting for November 3-4 to be held in Boston, Mass., in connection with the annual fall board meeting.

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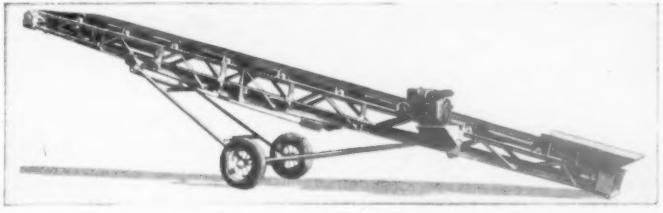
for Maximum Production

This quarry is Custom Engineered to maximum efficiency with Baughman HI-SPEED Conveying Equipment . . . Practical, experienced engineering—proven in operation—that will meet your exact requirements, increase your output and reduce your operating costs. Baughman standardized production methods cut your equipment expenses. We welcome the opportunity to discuss your particular problem . . . There is no obligation. Quality materials and expert construction minimize your maintenance expenses.

Some Valuable Sales Franchises are Still Available. Write for Information.

Pictured Above: MODEL No. 175 STANDARD MEDIUM-DUTY BELT AND BUCKET CONVEYOR

Pictured Below: MODEL No. 164 TROUGH BELT CONVEYOR



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Speeds Up Bulk Material Handling!

"Vibra-Flow"

VIBRATING GRIZZLIES

Feed and Scalp in one operation.

Increase crushing capacity and efficiency.

Bypass fines—oversize to crusher.

When feeding onto belt conveyors, they cushion the heavy abrasive lumps on a bed of fines. Their smooth, controlled flow assures even belt loads.

No motors, gears, pulleys, etc. to maintain.

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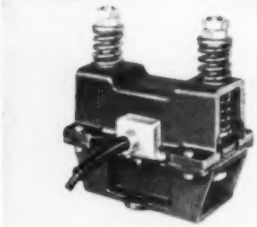

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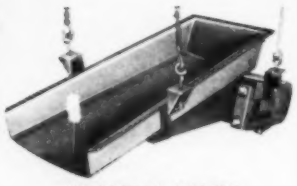
Make Stubborn Materials Flow Freely



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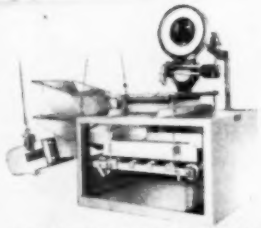

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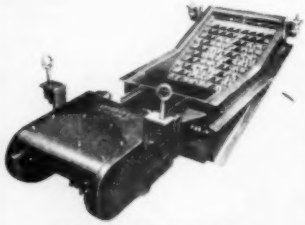

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Unquestionably the last word in Economy and Simplicity.
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BRADLEY PULVERIZER CO.
ALLENTOWN, PENNA.

Labor Relations Trends

(Continued from page 45)

failed to make, keep, preserve adequate and accurate records of their employes [approximately seven regular ones] and the wages, hours and other conditions and practices of employment maintained by them as prescribed by the regulations," etc. The issue was: "The plaintiff contends that the defendants' employes who are engaged in producing gravel and shale for use on instrumentalities of interstate commerce, and the employes engaged in any process or occupation necessary to such production, are covered by the Act because they are engaged in the production of goods for commerce within the meaning of the Act." The defendants maintained that: "The goods produced by the said employes have not been, nor are they being produced for interstate commerce since the operations of the defendants' business are conducted wholly within the state and are not in any way connected with interstate commerce."

The court ruled: "The business in which the defendants' employes are engaged is local in nature. Ultimately its product will be employed upon highways carrying interstate commerce. There is no immediacy to commerce on their part. The material they produced is picked up on the premises of the defendants in trucks of, and by, the county, hauled to highways where needed, and they have nothing to do with its transportation or its final incorporation into the highways. There is no more reason to say that they are engaged in the production of goods *for* interstate commerce than to say that they are engaged *in* commerce. They come strictly within the classification well adopted by other courts of 'off the road' employes and are not contemplated for coverage by the Act."

It has probably been thought by most producers that this issue had been disposed of in previous cases which we have reported here. It appears, however, that the administrator is still doing his best to find a court that will agree with his ruling, which still stands, that supplying materials for highway repair and maintenance is "production of goods" for commerce.

Roadbuilding Not Interstate Commerce

The National Labor Relations Board on the other hand refuses to handle the cases of employes of similar local construction materials producers. A recent decision is that in regard to Brewer & Brewer Sons, Inc., Chillicothe, Ohio, producers of sand, gravel, ready-mixed concrete, asphalt paving mixtures and dealers in building supplies, doing an annual business of approximately $1,000,000, including road construction and maintenance operations—all within the State of Ohio. The truck drivers' union sought to

take over through a decertification of the existing union.

The N.L.R.B. ruled: "Although we do not find that the employer's operations are wholly unrelated to commerce, we believe that the assertion of jurisdiction in this case would not effectuate the policies of the Act. We shall therefore dismiss the petition."

Foreign Cement Supply

PORTLAND CEMENT PRODUCTION in certain countries outside the United States is summarized in *Mineral Trade Notes* as follows:

Argentina: In the first half of 1948, 12,407,791 bags (110 lb. each) were produced, compared with 13,709,400 bags produced in the first half of 1947. Deliveries totaled 12,041,870 bags in the first half of 1948 and 13,935,340 bags in the first half of 1947. Average price per bag at the plant was $1.25, U. S. currency.

Brazil: Although national production of cement increased in 1947 it failed to meet demand, remaining in short supply all year, with black-market prices prevailing. Production in the last five years for which figures are available has increased from 747,409 metric tons in 1943 to 913,525 metric tons in 1947.

Egypt: With the installation of a new kiln, officials expect that it will be possible to export 100,000 metric tons of cement annually from Egypt. The two cement plants operating in the country have a potential production of 800,000 tons. In 1947 output totaled only 650,000 tons.

Iceland: In March, 1948, a law was enacted by the Althing authorizing the Icelandic government to take a loan up to $2.3 million for the establishment of a cement plant at Onundarfjordur with a production capacity of 75,000 tons per 300 working days. This would be the first and only plant of its kind in the country and would produce enough cement to satisfy all of the country's cement needs.

Gravel Plants Sold

INDIANA GRAVEL CO., INC., Indianapolis, Ind., has sold its two plants in that city, according to Jesse A. Shearer, president of the firm. The Indiana Gravel Co. currently is inactive, but maintains headquarters at 3330 Ruckle St.

Equipment Show

AMERICAN PUBLIC WORKS ASSOCIATION will hold its 55th annual public works congress and equipment show September 18-21 at the Municipal Auditorium, Kansas City, Mo.

N.S.G.A. Board Meeting

NATIONAL SAND AND GRAVEL ASSOCIATION will hold a board meeting September 26-28 at the Grove Park Inn, Asheville, N. C.

"Our 5 SECO Screens in daily use—never shut down for repairs"

says Roy Webster, Bundy Concrete, Sherbourne, N. Y.

Here is another example of Seco performance on the job! The Seco pictured above is one of 5 now in constant daily operation at the Bundy Concrete Company's plant. For maximum capacities, correct sizing and trouble-free operation, you can't beat Seco.

The modern, efficient plant layout of the Bundy Concrete Company, naturally calls for Seco vibrating screens. Seco's controlled, true circular action is a boon to good production.

In the words of Mr. Roy Webster, Sup't at Bundy, "For smooth, consistent operation, nothing else compares with a Seco. Our five Secos are never shut down for repairs."

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Rod Mills

for Sand Production

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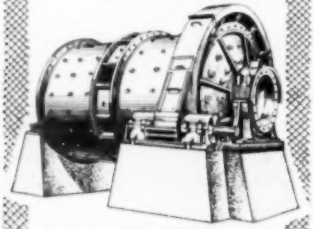

Write for Additional information

MINE & SMELTER SUPPLY CO.

Denver Salt Lake City El Paso
177½ Broadway, New York

Manufacturers' News

Johnston Pump Co., Los Angeles, Calif., announces that T. W. Simmons, Jr., has been elected vice-president and general manager, and Kenneth G.

T. W. Simmons, Jr.

Kenneth G. Lundie

Lundie has been appointed general sales manager. Mr. Simmons was formerly president of the Johnston Aquamatic Co., York, Penn., and for many years has been identified with the petroleum industry in California. Mr. Lundie was formerly Western sales manager of the Pomona Pump Co., Pomona, Calif., and was in charge of sales for the C. J. Hammer Co., Visalia, Calif.

The Thew Shovel Co., St. Louis, Mo., recently celebrated its 50th anniversary by delivering 145 birthday cakes to Thew-Lorain distributors and other associates of the company. Surprise deliveries were made by Western Union messengers at the same hour across the country, accompanied by a message from C. B. Smythe, president of the company. The firm became a corporation in 1899, following the development of the first full-revolving power shovel, designed and built by Capt. Richard Thew in 1895.

Cambridge Wire Cloth Co., Cambridge, Md., has erected an addition to its plant in Cambridge, Md., to house the wire fabrication department. Announcement has also been made that R. D. Travers Co., Hamilton, Ont., Canada, has been appointed distributor for the City of Hamilton and Niagara Peninsula. The Process Equipment Co., Montreal, Que., will represent the company in the entire province of Quebec.

American Wheelabrator & Equipment Corp., Mishawaka, Ind., announces that Watson P. Hall, a member of the service engineering staff for the past three years, has joined Robert Campbell in the Toronto, Ont., sales office. Previously, Mr. Hall was associated with Consolidated Mining and Smelting Works, North Ontario and Nova Scotia, and with the Sullivan Mines in British Columbia.

Joseph T. Ryerson & Son, Inc., Chicago, Ill., has appointed William G. Findlay as manager of the work order division in Chicago. He was formerly manager of the plant in Pittsburgh, Penn., and will be succeeded in that position by A. L. Petersen. John M. Acee, former manager of sales at the St. Louis, Mo., plant, has been named to succeed Mr. Petersen as manager of the plant.

L. B. Foster Co., Pittsburgh, Penn., has opened its new $150,000 plant and warehouse at Houston, Texas, which will serve the states of Mississippi, Louisiana, Texas, Oklahoma, Arkansas, Arizona, New Mexico, Colorado, Utah, southwestern Kansas, California, Nevada, and also Mexico.

Turner Construction Co., New York, N. Y., has announced the election of Edward X. Tuttle as vice-president in charge of new business, succeeding J. P. H. Perry, who will continue as vice-president and consultant on new business. Mr. Tuttle, who was formerly with Giffels & Vallet, Inc., will make his headquarters in New York, N. Y., and will have general supervision of contract negotiations of the offices in Boston, Philadelphia and Chicago.

Falk Corp., Milwaukee, Wis., announces the appointment of Sands G. Falk as manager of foundry sales. He succeeds John S. Wilkinson who will serve as foundry sales consultant for three months when he returns from a European trip, October 1, before his retirement at the end of the year.

Euclid Road Machinery Co., Cleveland, Ohio, has appointed Paul A. McDonald as district manager, succeeding J. W. Bloomquist who was recently named assistant sales manager. Mr. McDonald, who will make his headquarters in Minneapolis, will represent Euclid in North and South Dakota.

New FARREL-BACON CRUSHER

has many advantages

Design features of this 36 x 30 E stone crusher include: (1) Meehanite frame, sectionalized when necessary; (2) removable water cooled bearings; (3) improved design of swing jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive.

Write for further details or engineering help. BA-1

FARREL-BACON

ANSONIA, CONNECTICUT

Minnesota, upper Michigan, and parts of Iowa and Wisconsin. The branch office in Hibbing, Minn., remains in charge of J. R. Blackburn who has been district manager since 1937.

LaPlante-Choate Mfg. Co., Inc., Cedar Rapids, Iowa, has announced the appointment of J. W. Schoen to the position of sales manager, replacing E. R. Galvin who has resigned. This announcement was made by A. D. Dennis, assistant to the president. Mr. Schoen was formerly assistant to the general sales manager. He joined the company in 1943, serving in the treasury and sales departments. He is a graduate of the University of Iowa, Class of 1938, and prior to his association with La Plante-Choate, was with Firestone Tire and Rubber Co.

J. W. Schoen

R. G. LeTourneau, Inc., Peoria, Ill., has reorganized the service department into Eastern, Central and Western territories. Cloyd W. Richards will head the department as general service manager. Pat Edwards is Eastern service manager; George Crafton, Central service manager; and Jack Lewis, Western service manager. Headquarters will be at Peoria, Ill. Clyde E. Clair has been named special service representative, and Robert L. Gilmore has been appointed claims manager.

Mack Trucks, Inc., New York, N. Y., announces that Henry W. Dodge has been appointed executive vice-president of sales and advertising. Mr. Dodge recently resigned his position as chairman of the board and director of Air Products, Inc., and as chief of petroleum on the staff of Ambassador W. Averell Harriman in Paris. J. G. Van Nest has been named director of purchases, with headquarters at Allentown, Penn. He was formerly assistant to O. L. Lear, purchasing agent at the plant. Alfred H. Ranger has been appointed plant engineer at the Plainfield, N. J., factory. John G. Caley, formerly manager of the national accounts department for the Southern division, has been made district manager of the Birmingham, Ala., direct factory branch.

Henry W. Dodge

Goodyear Tire & Rubber Co., Akron, Ohio, announces that E. M. Burger, who recently completed a training course in foreign operations, has been assigned to the Mexico City plant as manager of mechanical goods development and technical service. He was

(Continued on page 90)

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CF&I Forged Steel Grinding Balls have long been known for their quality... and have satisfied users all over the world.

In the United States, for example, of the 61 major cement plants and mining properties using forged steel grinding balls in the eight western mining states, 54 use CF&I Balls.

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More CAPACITY per square foot of screening area!

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formerly section head of mechanical goods inspection and analysis, W. D. Bradshaw, assistant to the assistant manager of mechanical goods design of the company's Wolverhampton, England, plant, has returned to England after completing six months' special training in mechanical goods plants in the United States.

Hercules Powder Co., Wilmington, Del., has announced the appointment of J. J. Kelleher as assistant sales manager. He was formerly manager

J. J. Kelleher L. C. LeBron

of the contractors division and will be succeeded in that position by L. C. LeBron, a member of the sales and service organization at Birmingham, Ala., before he became Mr. Kelleher's assistant in 1948. Mr. LeBron, who joined the company in 1929, also served as agricultural engineer in charge of the sale of explosives for agricultural purposes and, later, as explosives department representative in Terre Haute, Ind.

Detroit Diesel Engine Div., General Motors Corp., Detroit, Mich., has appointed L. B. Smith, Inc., Syracuse, N. Y., as distributor for Series 71 diesel engines in central and northern New York State. The Diesel Equipment Co., Wichita, Kans., has been named distributor in central and western Kansas.

Acrow, Inc., New York, N. Y., has appointed the Southern States Equipment Co., New Orleans, La., as distributor in the state of Louisiana. J. E. Ingram Equipment Co., San Antonio, Texas will represent the company in 13 counties in the southern part of Texas. Cochran Equipment Co., Houston, Texas, has been named to handle 34 counties in the southeastern part of Texas, and Minneapolis Equipment Co., Minneapolis, Minn., will represent the company in the state of Minnesota and 22 counties in the state of Wisconsin.

Atlas Powder Co., Wilmington, Del., has appointed J. Charles Allen as chief engineer to succeed J. W. Hanson, Jr., who has retired. Charles G. Hersh has been made assistant chief engineer.

LeRoi Co., Milwaukee, Wis., has announced the appointment of Emmett G. Simmons as West Coast manager to replace W. Z. Bancroft who is now associated with the LeRoi-Rix Machinery Co., Los Angeles, Calif., a LeRoi distributor. Mr. Simmons will make his headquarters at San Carlos, Calif.

Hyster Co., Portland, Ore., announces that J. W. Morgan has been appointed assistant sales manager of the eastern sales division, with headquarters at the Peoria, Ill., plant.

Chain Belt Co., Milwaukee, Wis., announces the appointment of Douglas Jones as manager of the Salt Lake City district office. He will operate his business as the Douglas Jones Co.

B. F. Goodrich Co., Akron, Ohio, has named E. R. Traxler as manager of the new flat belting field engineering and development department. He has been with the company since 1935.

United States Rubber Co., New York, N. Y., has named Matthew J. Delehaunty as district sales manager for the Pittsburgh, Penn., branch of the mechanical goods division. He succeeds J. W. Greenwalt who has retired after 27 years of service with the company.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has named J. F. Fitzsimmons as manager of the commercial research department, succeeding J. R. Reed, who has resigned to establish his own business. William W. Moore, formerly a sales representative in the Detroit district office, has been appointed manager of the Toledo district office, and Harold L. Gruehn, formerly sales representative in the Milwaukee district office, has been made Midwest region dealer supervisor with head-

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This Sauerman Stackline Cableway digs gravel from lake and keeps screening plant supplied with 75 tons an hour at low cost.

Sauerman Scraper moves material from wide pit to crusher.

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You can dig and haul from pit, bank, river or pond, strip overburden, or store and reclaim loose materials at lowest cost with a SAUERMAN Machine. Use a Scraper for handling dry material a Cableway for under-water digging. Either machine will range rapidly over a wide area, digging, hauling and dumping in one operation. Requires only one man at the controls and power consumption is remarkably small, whether electric, gasoline or Diesel. Installation cost is low and maintenance simple.

Let us recommend the right type of machine for your work. Send for our illustrated Catalog and tell us about your own problems.

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quarters in Chicago, Ill. The Midwest region includes branches in Davenport, Iowa, and Rockford, Ill.

A. P. Green Fire Brick Co., Mexico, Mo., has announced the election of William S. Lowe as executive vice-president. He was formerly associated with Reeves-Ely Laboratories, Inc., New York, N. Y., in connection with which he has served as chairman of the board and president of the Winsted Hardware Mfg. Co., Winsted, Conn.; chairman of the executive committee, director and treasurer of the American Transformer Co., Newark, N. J.; and vice-president of the Waring Products Corp., New York, N. Y.

Hobart Brothers Co., Troy, Ohio, has appointed J. E. White, St. Louis, Mo., as distributor in a number of counties in Missouri and western Illinois. He will operate under the name of Hobart Welder Sales and Service.

Pennsylvania Crusher Co., Div. of Bath Iron Works, Philadelphia, Penn., announces the promotion of Woodrow W. West to chief sales engineer, with headquarters in Philadelphia.

Worthington Pump & Machinery Corp., Harrison, N. J., announces that John J. Summersby has been elected

Thomas J. Kehane

John J. Summersby

vice-president in charge of sales, and Thomas J. Kehane has been named assistant vice-president and general sales manager, John P. McArthur has been appointed manager of West Coast sales, with headquarters in San Francisco, Calif. Mr. Summersby joined the company in 1916 as student engineer at the Cincinnati Works. In 1919 he was assigned to the St. Paul district office as a salesman and later was made district sales manager. He was made manager of sales at Holyoke Works in 1929 and three years later became assistant general sales manager. Mr. Kehane became associated with the company in 1915 as office boy, advancing through various positions in the sales department. In 1944 he was appointed commercial vice-president, Pacific Coast, Hr. McArthur joined Worthington in 1936 as an estimating engineer in the Philadelphia district office. Two years later he became a sales engineer and in 1945 was made manager of the San Francisco district office.

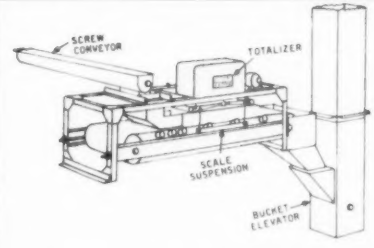
Hewitt Rubber Div., Hewitt-Robins, Inc., Buffalo, N. Y., has appointed the Hines Bearings & Industrial Supply Co., Billings, Mont., as distributor in Billings and surrounding territory.

Lincoln Electric Co., Cleveland, Ohio, announces the appointment of E. E. Goehringer as district manager in Indianapolis, Ind. Omer Blodgett has been transferred to the Chicago office on a special assignment in addition to his duties as sales engineer. R. L. Hall and Robert Hirsch have been assigned to the Pittsburgh office as district engineers.

American Brake Shoe Co., New York, N. Y., announces that Edward R. Anderson has been appointed vice-president of the Kellogg division, with headquarters in San Francisco, Calif. He has been district sales manager of the Pacific district for this division since 1947, and will continue to serve in this capacity in addition to his new duties.

Marion Power Shovel Co., Marion, Ohio has announced the transfer of John W. Bishop to the Chicago office where he will work with C. M. Gegenheimer, district manager. Mr. Bishop will continue as sales representative in the Evansville, Ind., area.

Baker-Rauling Co., Cleveland, Ohio, announces that Robert H. Davies has joined the company as manager of engineering. He was formerly with Lincoln Electric Co., serving as representative in Washington, D. C., and as consulting engineer in charge of educational work.



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Transportometer Division

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Amsco WELDING PRODUCTS

Amsco No. 459

increases life 2 to 5 times for dippers, pug mill knives, brick dies, shredder knives, drag chain links, pulverizer hammers, sand pumps and similar parts. Amsco No. 459 is centrifugally cast . . . resists softening up to 800° F. . . . and has a Brinell hardness of 500-600. No. 459 produces a chrome-moly martensitic iron deposit and is designed for severe abrasion service with moderate impact conditions.

The application above shows Amsco No. 459 applied to the front and teeth of a manganese steel walking dragline bucket, used for stripping overburden from iron ore at a Minnesota mine. In similar applications where more severe impact coupled with abrasion is encountered, Amsco Economy Hardface is recommended.

Ask for free reprint of Hard Surfacing by Fusion Welding

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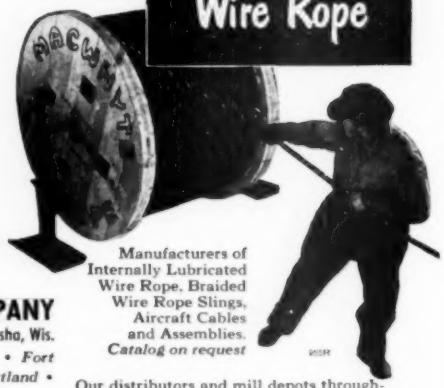
Macwhyte Wire Rope



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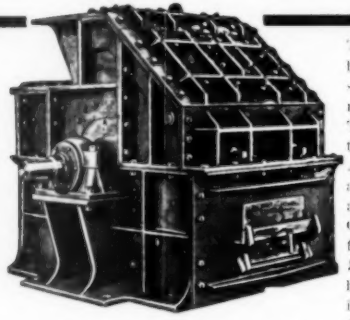
For Better Agstone Sizing . . .
AMERICAN CENTER FEED HAMMERMILLS



To obtain faster reduction plus higher efficiency in reducing to agstone size, American ACS Hammermills have a *special center feed*. The hopper opening is centered over the rotor, subjecting the stone to longer travel in the hammer circle and greater frequency of impact—assuring a higher ratio of fines. Quickly and easily adjusted to different sizing, American Center Feed Hammermills offer three types of hammers to insure complete flexibility of crushing action: A, "Brute" for heavy duty. B, "Broadhead" for medium reduction, and C, "Splitter" for fine reduction. The type of hammer and number of hammer rows are fitted to your specific sizing operation.

Write for "Better Stone Crushing" bulletin.

American PULVERIZER COMPANY
Originators and Manufacturers of Ring Crushers and Pulverizers
1245 Macklind Ave.
St. Louis 10, Mo.

New Incorporations

Round Rock White Lime Co., has been organized in Round Rock, Texas, with $80,000 capital stock by Nat S. Perine, Oliver P. Whittington and A. J. Maloney.

The Footville Lime and Rock Co., Footville, Wis., has been incorporated to deal in agricultural limestone, roadrock and similar products. Minimum capital is listed as $25,000 with 100 shares, no par value. William A. Canary, Lester A. Helgesen and Crosby H. Sommers are the principals.

Waukesha Lime and Stone Co., Inc., Pewaukee, Wis., has been organized to deal in sand and gravel and similar products. Minimum capital is listed as $135,000. Irving A. and Helen Sisson Puchner and William E. Shaw are the principals.

Dresser Trap Rock Co., Dresser, Wis., has been incorporated with a minimum capital of $30,000 and 1000 shares, $100 each, to quarry, mine and crush trap rock and other stone. Principals are Carl R. Thye, Robert Soderberg, and Harry S. Pomeroy.

Black Hills Aggregate Co., Inc., Newcastle, Wyo., has been organized for the manufacture of crushed stone, sand and gravel, and mineral aggregates. Capital stock is listed as $100,000. Paul E. Foster, V. F. Barnett and Laurence Sorenson are the principals.

Wauwatosa Stone Co., Wauwatosa, Wis., has been organized for the development and operation of stone quarries and gravel pits. Minimum capital is listed as $10,000, with 250 shares, par value $100. Patrick J. Murphy, Edward Schwerm, and Ralph R. Wegner are the principals.

Stedfast Stone and Brick Corp., Milwaukee, has been organized with 500 shares, no par value, and a minimum capital of $500, to deal in cement, lumber, and other building materials. Donald Palen and Clyde Hubert Frick are the incorporators.

Coastal Sand Co., Johnsonville, S. C., has been granted articles of incorporation with a capitalization of $25,000. C. D. Orrell is president of the firm.

Phosphate Sand Co., John's Island, S. C., has been incorporated with a capital stock of $2500. McLeod Creighton is president.

Gravel Sales Co., Harlingen, Texas, has been incorporated by A. C. Clarke, Sr., W. S. Walters, and Gamble J. Palmer with a capital stock of $1000.

Comeco Limestone Co. was granted a charter at Dover, Del., with a capital of $200,000.

Philadelphia Trade Fair

THE GREATER PHILADELPHIA TRADE FAIR of 1949 will be held September 24-October 1 at the Convention Hall and Commercial Museum in Philadelphia, Penn. The Portland Cement Association is among the trade groups that will be represented.

CONCRETE PRODUCTS

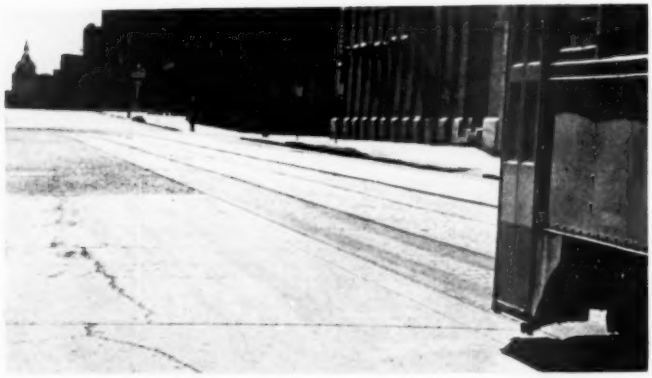
CONCRETE UNITS . READY-MIXED CONCRETE

Block storage yard of Aquatile Tile Co., Bradentown, Fla.

A SECTION OF ROCK PRODUCTS

First Ten Years *prove:*

Atlas Duraplastic* Air-Entraining Portland Cement makes concrete more durable



TEN YEARS AGO, in August, 1939, this concrete test paving was laid in Second Avenue North, Minneapolis. The badly scaled section of roadway in the background was made with regular portland cement. The foreground section, *laid at the same time*, was made with Atlas Duraplastic—the first commercial use of the air-entraining portland cement originated and developed by Universal Atlas.

Both sections, subjected to the severity of 10 Minneapolis winters and to heavy applications of de-icing salts, are shown above as they appeared in July, 1949—convincing proof of the characteristic durability of Duraplastic concrete, of its high resistance to freezing-thawing weather and the scaling action of de-icing salts. Longitudinal structural crack shows some ravelling. Note perfect transverse joint.

FROM its first small commercial use in 1939 to the super paving and construction jobs of today, the outstanding durability of concrete made with Atlas Duraplastic has won increasing recognition among engineers and contractors. Proof of its wide acceptance: In 1939, less than 60,000 barrels of Duraplastic were used for paving, then its sole use. In the following ten years, more than 25,000,000 barrels have been applied to an expanding variety of concrete uses.

For Paving Concrete, Duraplastic creates entrained-air cells in the concrete that minimize bleeding and segregation and thus protect it against the scaling action of freezing-thawing weather and de-icing salts (see photo). Less mixing water is required for a given slump. The resultant mix is more plastic, more cohesive, more uniform. It dumps, screeds and finishes easily.

For Structural Concrete, Duraplastic imparts to the mix the extra plasticity that aids proper placement. Water gain and segregation are reduced; surface appearance is improved. Because of these advantages *and* added durability, architects, engineers and contractors today rely on Duraplastic for all types of mass and structural concrete—for foundations, walls, floors, columns and other construction. And they find it readily adaptable to slip-form work, gunite, stucco and other uses.

For Concrete Products, finished units of block, brick, pipe, drain-tile, silo staves, etc., exhibit greater resistance to passage and absorption of water. For machine-made products, manufacturers find Duraplastic permits a damper mix that is more cohesive, holds together better and feeds easily through machines. Plants report savings in fewer culls and throwbacks and less breakage in handling green products.

For construction needs of today and tomorrow, Duraplastic offers *better concrete at no extra cost*. It provides the precise amount of air-entraining agent interground with the cement for satisfactory field performance. It complies with ASTM and Federal specifications, sells at the same price as regular cement and calls for no unusual changes in procedure.

Send for New Free Booklet, "A Decade of Atlas Duraplastic Air-Entraining Portland Cement." Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

CP 7-93

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

INDUSTRY NEWS

Eliminates Dust At Ready-Mix Plant

ELIMINATION of a dust nuisance created in handling cement during the manufacture of ready-mixed concrete at the Duert Concrete Co., Inc., South Bend, Ind., has been accomplished through a dust collection system supplied by American Wheelabrator & Equipment Corp., Mishawaka, Ind. The system ventilates batching equipment and exhaust vents on two mixers in the plant to give improved working conditions, a neater looking plant, more efficient operation, and product recovery of an appreciable daily savings, a report from the equipment firm states.

Distributes Marble Face Block

EDWARD S. SCHULHOF, president, Knighton Process Marble Face Block Licensing Corp., New York, has announced that the New Jersey Block Products Co. has renegotiated its license to include the entire State of New Jersey and will shortly open additional plants to service the area with the marble face block.

Base Course Under Concrete Pavements

NATIONAL CRUSHED STONE ASSOCIATION has announced publication of the fifth article in its Stone Briefs series issued by the Engineering division. Entitled "The Insulation Base Course Under Portland Cement Concrete Pavements," it was written by J. E. Gray, N.C.S.A. field engineer, and it is the aim of the paper to present certain theoretical considerations and practical results so that a better understanding will be had of the functions and the essential characteristics of the so-called "insulation base course."

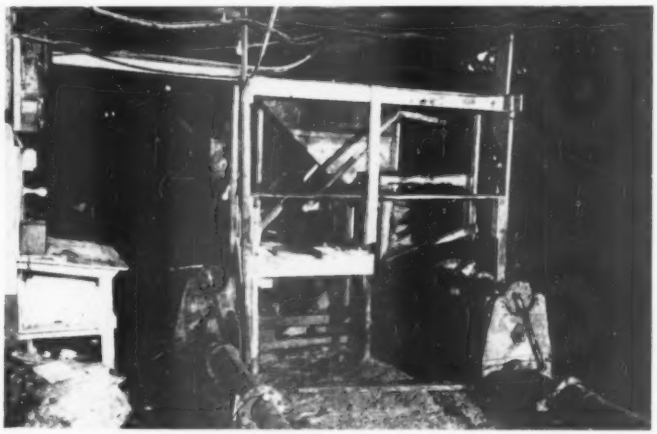
Block Production Meeting Demand

FREDERICK W. REINHOLD, president, Anchor Concrete Products, Inc., Cheektowaga, N. Y., stated recently that for the first time in over four years, Buffalo area concrete block producers probably will have enough units to meet demand. The remedy this year came from high production of area plants and a falling off in building activity, he said. Mr. Reinhold's plant, largest block producer in the area, manufactured 5,000,000 block in 1948. At present, the firm has an inventory of approximately 800,000 block. The plant currently is producing about 600,000 block per month.

Prestressed Airstrip

GREAT BRITAIN has announced plans to build an experimental airstrip of prestressed concrete at London's Heathrow airport. The strip will be 120 ft. wide, 343 ft. long, and roller joints will be formed along lines at 45 deg. to the longitudinal axis. A precompression of the concrete slab in this direction will be induced by transverse prestressing, no longitudinal wires being necessary.

PACIFIC BRICK CO., Pacific, Mo., has announced that it will resume the manufacture of concrete silos.



Dravo Corp., Pittsburgh, Penn., is placing concrete for a 340-ft. underground coal preparation chamber at J & L's combined Vesta Mines No. 4 and 5, using the equipment shown above. Ready-mixed concrete is dropped through a 10-in. bore hole from the surface into the hoppers of the pneumatic placers. It then is piped by compressed air to the pouring location. Each of the two placers handle about 30 cu. yd. of concrete per hr. Compressed air is supplied from a temporary compressor plant in the company's yard location at the surface

LEFLER CONCRETE BLOCK CO., Charlotte, N. C., now is producing septic tanks, concrete pipe and drain tile in addition to concrete block, according to George F. Lefler, partner-owner and manager of the firm.

EMPIRE CO., INC., has been organized at Boise, Idaho, for the manufacture of Brikcrete masonry brick in dimensions of 12- x 8- or by 4-in. and featuring various colors such as ivory, cream, coral, green and rose. Milo Andrus and J. M. Bouer are the incorporators.

CUNARD-LANG CONCRETE CO., Columbus, Ohio, recently observed its 40th year in the production of concrete block. The firm now manufactures more than 48 sizes and kinds of block, including plain block in 4-, 6-, 8- and 12-in. sizes, cinder block, bull nose corner block, and rock face types.

RICHARD W. SHIELDS is superintendent of a ready-mixed concrete plant which has been set up at the Blue Rock Quarry, Westbrook, Me. Norman W. Blethen is quarry manager.

THE BREMSER COAL & SUPPLY CO., Norwalk, Utah, has completed installation of a concrete block plant with a capacity of approximately 800 block per 8-hr. day, C. N. Klein, owner-manager, has announced.

O'FALLON CONCRETE BLOCK CO., O'Fallon, Ill., has completed a modernization program which includes the installation of new machinery.

CONCRETE SUPPLIES, INC., Homestead, Fla., has been granted articles of incorporation with 100 shares, no par value. Ernest C. Odum, Earl F. Bradenburg, Jr., and Raymond Warford are the principals.

ROY DAUGHERTY, White City Building Materials Co., and John Sanders, Standard Gravel Co., Camden, Ark., have started construction of a ready-mixed concrete plant on a site owned by the gravel company.

ROGER DICKENSON has constructed a concrete block plant on the banks of the Mississippi River, near Anoka, Minn., where 8- and 12-in. units will be produced.

FORD MONTZ has purchased the ready-mixed concrete plant of Jones Materials, Inc., at Lawrenceville, Ill.

CEROVSKI CEMENT PRODUCTS, has started the production of concrete block, house markers, bird baths, and similar items at Lewiston, Mont., according to Chuck Cerovski, owner.

PLATTE VALLEY CEMENT AND TILE CO. has reopened its plant, George Lillie, owner, has announced. The company has contracted to furnish a large siphon for use on the Republican River. Plant capacity is 100 cu. ft. of tile per day.

CONCRETE PRODUCTS AND TRANSIT MIX SERVICE, Shippensburg, Penn., has installed a 400-bbl. bulk cement storage bin to provide more efficient service, John R. Bert, partner, has announced.

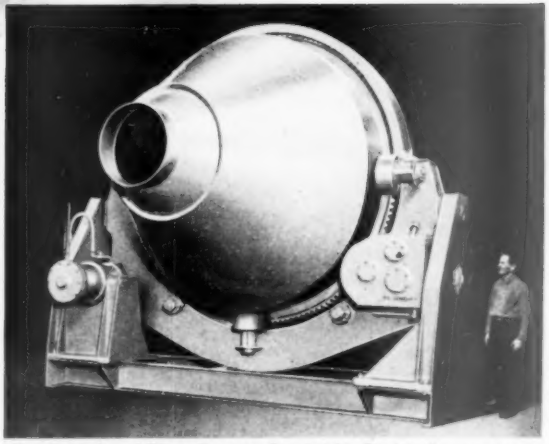
Yes Sir! We Really $ave with these TWO PROFIT MAKERS

You can make more money mixing concrete in a Smith 6 yard Tilter and delivering the concrete in Smith-Mobile Agitators . . . a profit-making combination for big concrete projects and Ready-Mix plants.

The initial cost of a Smith 6 yard Tilter is not much more than a 4 yard mixer, but it will give you 50% greater output with practically the same labor, power and overhead cost. It steps up your plant capacity, gets agitators out of the yard in a hurry, reduces the cost per yard of concrete to rock bottom.

Smith Tilters mix any type of concrete at any slump and discharge it with absolutely no segregation. Six sizes available — 1, 2, 3, 4, 5, or 6 cu. yds. per batch.

Smith-Mobiles are designed to deliver the maximum payload per pound of mixer. No deadweight. Built of the toughest wear resistant materials. Four sizes available — 2, 3, 4½ and 5½ yards as truck mixer — 3, 4¼, 6⅛ and 7⅜ yards as agitator.



New Smith 6 yard Tilter. Compact. Low height. Fits into the same space formerly used by a 4 yard Mixer. One batch fills a 6⅛ yard agitator.

Smith-Mobile 6⅛ yard Agitator. Loads and discharges at top speed, even dry, low slump concrete. Takes entire batch of a Smith 6 yard Tilter.

GET THESE NEW CATALOGS

Just off the press. Bulletin No. 244 describes the new Smith 6 yard Tilter. Catalog No. 239 describes Smith-Mobile Truck Mixers and Agitators. Write for your copies.

The T. L. SMITH COMPANY

2885 N. PALMER STREET • MILWAUKEE 10, WIS., U. S. A.

SMITH MIXERS

FOR BIG CONCRETE PROJECTS AND READY-MIX PLANTS

Metz Brothers Baking Company, Sioux City, Iowa.
Engineer — W. E. Long Company, Chicago, Illinois;
Contractor — W. A. Klinger Co., Sioux City, Iowa;
Pozzolith Concrete supplied by Ready Mix Concrete Co., Sioux City, Iowa.
Over 25,000 sq. ft. of Masterplate Floors in flour storage building and receiving dock.

Over 400 Leading Ready-Mixed Plants are now equipped with the **POZZOLITH Automatic Dispenser**

WHY?

Because a producer can, at lower cost:

1. Produce waterproof concrete . . . with normal Portland cement.
2. Produce high-early strength concrete . . . with normal Portland cement.
3. Produce air entrained concrete without strength loss . . . with normal Portland cement.
4. Produce all of the above properties out of one cement bin . . . with normal Portland cement—stepping up production, reducing inconvenience in handling and cutting costs.

●

In normal mixes, concrete of any given durability, strength and workability, is produced more economically with Pozzolith than with any other material on the market, added at the mixer or inter-ground.

POZZOLITH CONCRETE
Means Better Buildings

Pozzolith Concrete means better buildings because it means concrete work which has specified strength, is watertight, has good appearance and great durability.

These qualities are the result of the cement dispersing action of Pozzolith which (1) puts more of the cement to work (2) makes available optimum air content (3) conforms with the water-cement ratio law.

Because of these benefits, plus economy, over five and one-half million cubic yards of Pozzolith Concrete were placed in 1948.

Full data on Pozzolith, and ACI and ASTM procedures for design, specification and production of concrete, on request.

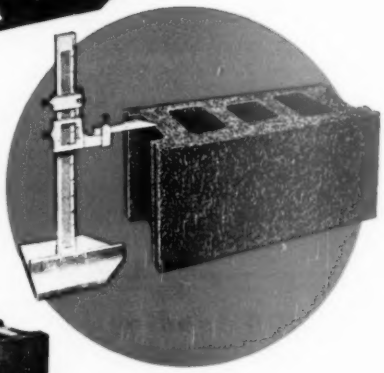
the MASTER BUILDERS Co

CLEVELAND 3, OHIO — TORONTO, ONTARIO

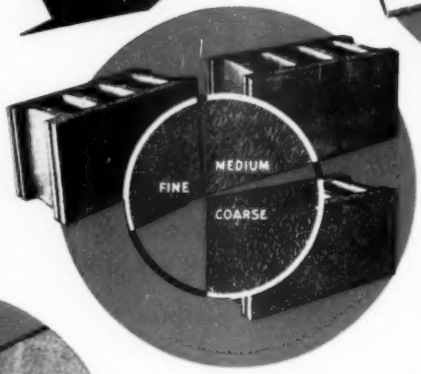
Besser Automatic Control

AVAILABLE for prompt shipment and easily installed on all Vibrapacs. This applies to Vibrapacs now in use and new Vibrapacs to be shipped.

EXACT HEIGHT



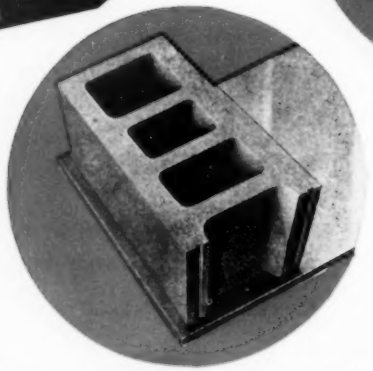
UNIFORM DENSITY



BESSER AUTOMATIC HEIGHT AND DENSITY CONTROL

For automatically securing exact and Uniform Height and Density of block, Besser Automatic Control governs length of feed time in order to secure uniform finish time, thereby obtaining uniform Height and Density, and highest quality when grading, moisture and mixing time varies.

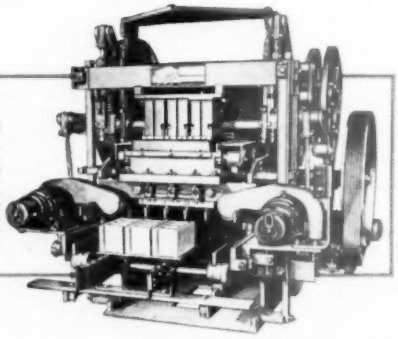
100% PRESSED TOP



Unites concrete after passing core bar. Stripper shoes move inward to press area under core bar.

BESSER Super Vibrapac

— the fully automatic, Plain Pallet block machine. Requires no machine operator. Pallets are fed automatically. Three 7⅝ x 7⅝ x 15⅝ modular units made at a time on one Plain Pallet.



BESSER VIBRAPAC · BATCH MIXERS · SKIP LOADERS · BLOCK CUBERS · AGLITE PLANTS · ACROW CENTERS · GENUINE PARTS

BESSER MANUFACTURING COMPANY

Complete Equipment for Concrete Products Plants

115—49th STREET • ALPENA, MICHIGAN • U. S. A.

Jaeger dual-mixed specification concrete

is highest quality, accepted on all jobs,

yet often costs less in place in the forms

Because it is positively dual-mixed, accurately controlled for slump and delivered without segregation over any kind of haul, concrete mixed to specification in Jaeger Truck Mixers is known and accepted by architects and engineers *on every type of work.*

The contractor also enjoys a cost-saving advantage. Concrete delivered by Jaeger Truck Mixers is definitely more workable, is poured faster under perfect control and on the dependable schedules maintained by Jaeger-equipped plants which are the pace-setters of the industry.

More concrete is sold today in Jaeger Truck Mixers than by any other method. The Jaeger Machine Company, Columbus 16, Ohio.

Only Jaeger supplies top or end loading mixers to meet plant and local aggregate requirements, in all standard Truck Mixer Bureau ratings — 2 - 3 to 5½ - 7⅜ cu. yds. Ask for Catalog TM-8.

PUMPS

COMPRESSORS

HOISTS

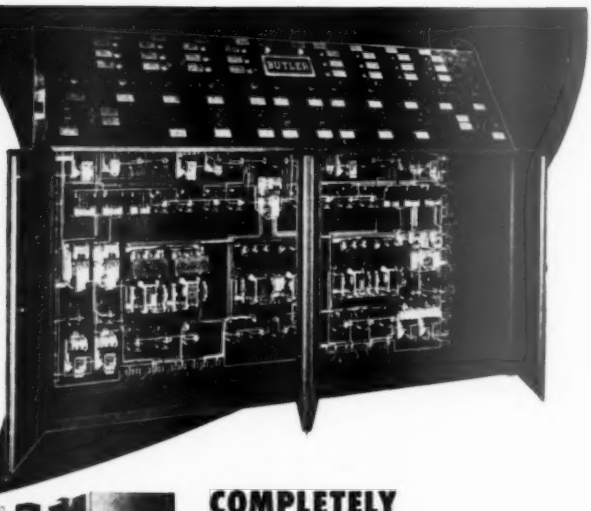
JAEGER

engineered equipment

"NEW STANDARD" SIZE AIR COMPRESSORS UP TO 600 CFM

PUMPS UP TO 240,000 GPH • 2-SPEED HYDRO-HOISTS UP TO 100 HP

FOOL-PROOF COMPLEXITY



COMPLETELY PUSH-BUTTON IN CONTROL

AMAZING, NEW

BUTLER WEIGH BATCHER FOR READY-MIXED PLANT

BATCHES 8 MATERIALS *AUTOMATICALLY*

Two Weigh Batchers for Ready-Mixed Plants, robot-like in their completely automatic operation, — engineered, designed and built by BUTLER for the Dravo Corporation, are today setting production records as barge-mounted units in Ohio River concrete construction.

In fool-proof wiring complexity these twins can be compared only with master switchboards for automatic dial telephones; certainly they are unsurpassed in the construction industry.

The batching cycle starts with a push-button on the control console. No action results until a series of pilot lights flash to show all scales are in empty balance and batcher discharge gates are closed. When batches are complete, photo-electric cells on scale dials actuate solenoid valves, — instantaneously shut off supply to batchers. Interlocking controls prevent abortive discharge.

Other features: white lights on console show which mixers are ready . . . automatic vibrator on cement batcher . . . "Ready for Batch" and "Batch Discharged" signal lights . . . Emergency batch buttons . . . Electrical recorder on each cement scale.

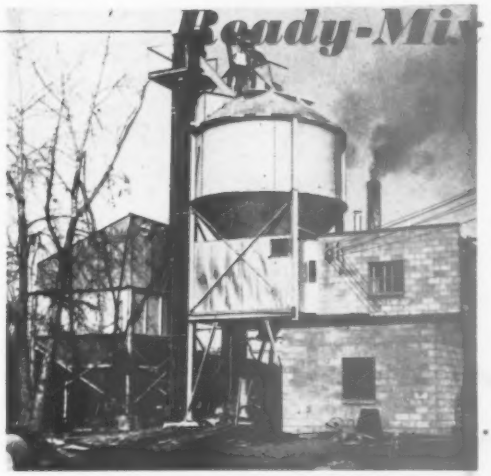
For a full, illustrated description of this BUTLER triumph write to BUTLER BIN COMPANY, Waukesha, Wisconsin.

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

Two-way Radio Expedites Concrete Deliveries

Central Ready Mixed Concrete Co. builds substantial business around small sales to Iowa farmers. Plant equipped for cold-weather operation

By DAVID MOCINE



Ground storage cement bin, left, and office over boiler room, right of Central Ready-Mixed Concrete Co.

BEING LOCATED in a comparatively small college town in Iowa, Central Ready-Mixed Concrete Co., Iowa City, depends to a great extent upon the farm trade. W. R. Horrabin, president, states that 75 percent of the company's business comes from farm pours. Due to the large rural area covered by the firm's drum-type mixer trucks, several innovations, including a two-way radio installation, are noteworthy. Also of interest is the degree of mechanization in the batching plant.

There are several major advantages to the use of radio in a ready-mixed concrete operation, according to Mr. Horrabin, who adds that these, together with many minor uses, make the radio installation almost indispensable. When a mixer truck goes out on a pour in the morning and the driver finds the forms not yet completed, there is a good chance that the closest phone is a mile away, but by radio he is in immediate touch with the dispatch office. The dispatcher is able to direct him to the next closest location and also stop any additional trucks from coming out on the original pour. The radio is also important from the customer's standpoint, as it affords him a means of immediate contact with the batching plant if a change must me made in the mix of future deliveries or if he must order additional concrete to finish a pour. Ready-mixed concrete trucks make deliveries in a 28-mile radius from the plant, although the average haul in the busy seasons is only 12 miles.

The owner also has a radio in his car which he uses for servicing: he drives to the job and reports job progress back to the plant, setting up schedules "on the job," resulting in no time delay between the job and the dispatcher's office.

A definite place for the radio has been found as a builder of good will. For instance, trucks in the rural district report accidents to the dispatch office, where they are phoned to the police or interested parties. The radio at this installation is of General Electric manufacture and carries for about a 25-mile radius. In addition to the radio in the dispatch office at the plant and in the owner's car, four trucks are so equipped, and all are connected to the main office in the center of town.

Truck dumping gravel, right, which will be elevated by bucket elevator, center, to overhead bin. Mixer truck of 3-cu. yd. capacity being charged, left

Batching Facilities

Operations of the ready-mix batching plant were begun in 1946. Most aggregate is received at the plant by truck from the sand and gravel plant. It is elevated to a 4-compartment overhead bin of 140-ton capacity by bucket elevator in the usual manner. Bulk cement, received by rail, is elevated to a 320-bbl. capacity overhead bin, with overflow being chuted to a ground storage bin of 600-bbl. capacity. As some aggregate for special concrete is received by rail, a rail hopper is also provided, with one 20-in. belt conveyor on 40-ft. centers passing beneath both the rail and truck hopper to reclaim the aggregate and transfer it to the bucket elevator.

An Allis-Chalmers HD-5 diesel track-type tractor with a 1-cu. yd. Tracto-shovel mounted on the front is used to reclaim aggregate from stock-

W. R. Horrabin, owner, at the two-way radio station located in the dispatcher's office

piles as well as for general yard clean-up.

A 4-cu. yd. weigh batcher is located under the bins and is of Blaw-Knox manufacture, as are the overhead bins. Water is proportioned by weight. The five drum-type mixer trucks are of 2- and 3-cu. yd. capacity and are of Jaeger, Smith and Rex manufacture. All mixer bodies are mounted on International chasses, with the larger bodies on tandem axle jobs.

Steam Plant for Winter Operations

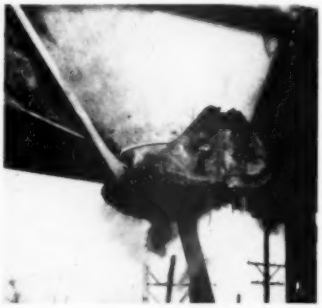
Winter weather is a large factor to overcome in delivering ready-mixed concrete in this area, but management has found that 78 deg. F. concrete can be delivered successfully in 2 deg. F. below zero temperatures. A 30-hp., natural gas fired boiler is used for heating the aggregate through a 3-in. line, with two 1/16-in. jets per bin providing sufficient heat and at the same time avoiding excess condensation or moisture. Sand at this operation contains 3 to 4 percent moisture in the winter months, while in the summer period water content is 1 to 2 percent.

Water is preheated in a 200-gal. gas-fired boiler to a temperature of 70 deg. F. From this tank the heated water travels through a flash-type steam condenser that raises the temperature to 180 deg. F., after which the water goes to a 500-gal. storage tank. A circulating pump is connected to the storage tank and activated by an aquastat that is set for 180 deg. F. The aquastat also operates an electrically-controlled valve that allows the water to pass back to the condenser for re-heating. The boiler and water-heating system is all automatic and usually operates from November 1 to April 1, 24 hr. per day.

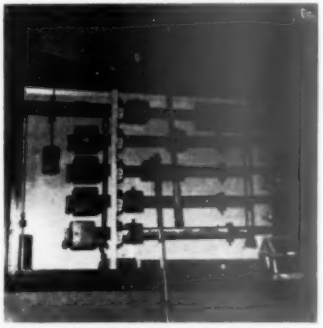
Copper tubing, connected to the steam line running to the aggregate hoppers, is coiled around the batcher discharge gate in the truckway under the plant, thus keeping it ice-free and permitting easy operation in freezing weather. The dispatcher's office is located on the second floor of a sand and gravel concrete block building that also houses the weighbatch floor, making for easy communication between dispatcher and batcher operator. Steam boiler and water-heating equipment is located on the ground floor of the office building.

Safety Plan

Last year a plan was put into effect in an effort to keep the trucks more presentable, thus utilizing their advertising value. A $50.00 prize was offered to the driver having the fewest accidents and the cleanest truck at the end of the year. The plan paid off—for at the end of the year, $250.00 was paid to the drivers of the five-truck fleet. There was not a single accident last year, and though previously it had been necessary to paint the trucks each year, this year they are running with last year's paint job.



Copper tubing coiled around discharge gate of batcher provides steam heat to prevent freezing in sub-zero weather



Five-arm weigh batcher for aggregate and cement. Note intercommunication speaker, right

Lightweight Aggregate From Expanded Slate

SOUTHERN LIGHTWEIGHT AGGREGATE CORP., Richmond, Va., a comparative newcomer in the lightweight aggregate field, recently released an interesting brochure covering its material. The aggregate is prepared in a sintering plant constructed near the company's shale quarry about 50 miles from Richmond.

The brochure uses an enlarged photograph of a Solite concrete slab as background, and prominently displays the company's trademark. Six points are covered, all illustrated with pictures and graphs: description, durability and soundness, unit weights, chemically inert, refractory and insulating qualities, and strength.

DURANT CONCRETE BLOCK CO., Durant, Okla., is now producing Celocrete block, in addition to its regular line of concrete and pumice block. Plant capacity is 800 units per day.

Three-cu. yd. drum-type mixer truck, equipped with two-way radio, making pour to apartment house foundation job in Iowa City

Improved Masonry Units Through Research

Layrite Concrete Products, Spokane, Wash., studies aggregates, mixing time, mortars for quality control; develops improved methods for machine production

By WALTER B. LENHART

LAYRITE CONCRETE PRODUCTS has plants located in Spokane, Kennewick, and Seattle, Wash. The Spokane plant, managed by H. C. Lutes, features a Besser Super Vibrapac machine, and Mr. Lutes is now installing a new Besser silo stave machine. The Kennewick plant, managed by R. W. Ross, uses a new Besser K-3 Super Vibrapac. New steel bunkers and batching equipment are being installed at this plant. The Seattle plant also uses a Besser Super Vibrapac and is managed by Verne Frese, son of J. Frese who is an old timer in the construction business. J. Frese owned and operated a ready-mixed concrete plant, and a sand and gravel plant in Spokane prior to 1939. Since then, with the help of his three partners, Lutes, Ross, and Verne Frese, he has built up the Layrite organization.

Considerable research has been done in all of the Layrite plants. Leo Jensen at the Spokane plant is conducting research on grading. Verne Frese and his plant superintendent, Wally Beardsley, are conducting research on the dimensional stability of concrete and pumice block and how it is affected by different mixes, curing cycles, and weather conditions. Some extremely interesting results have been obtained and will be available for future publication. At the time of inspection at the Seattle plant, experiments were being made with Darex.

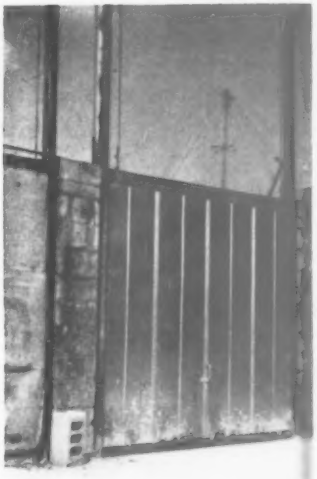
Verne Frese, a graduate physicist and engineer, brings to the industry view points that are not only sound but which can be of considerable benefit to the industry as a whole. Besides operating economically, he believes that it is necessary to keep one jump ahead of his competitors by research —even though that research be slow and tedious.

In experimenting with the effect of mixing time on concrete and pumice concrete used in the Besser machine with the Seattle plant materials, it has been found that the strength of concrete increases in a uniform manner from two minutes, through three, and up to four minutes. The strength drops off at five minutes, but climbs at six and up to eight minutes. At eight minutes the material becomes too gummy for the machine to handle.

Working in conjunction with the Concrete Products Association of Washington and the University of Washington, Mr. Frese has become convinced that too rich a mortar causes many block cracks. He cited as an example buildings at the University where some cracking occurred in partition walls when a 1:1:6 mortar was used. When a 1:9:27 mix was used the wall was solid and free from cracks. He realizes however, that this lean mix would not be suitable for exterior load bearing walls.

The Seattle plant, located on Highway 99 not far from Boeing Airfield, fronts on the Duwanish Waterway and has a railroad spur on the U.P. This location gives excellent transportation facilities.

The Seattle plant uses six 9- x 50-ft. steam kilns with 9- x 7-ft. aluminum doors. These doors, double-walled and insulated, weigh 35 lb. each. The doors were made in the plant's aluminum window factory where Premier aluminum windows are assembled, and Layrite special windows are made. All windows are glazed with neoprene tape, and the aluminum molding is fastened with metal screws.



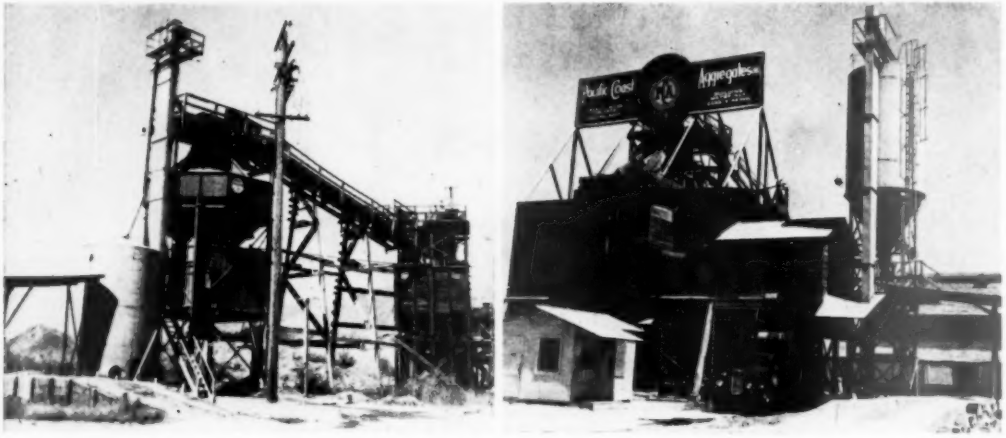
Aluminum doors to curing room weigh 35 lb. and are said to outlast iron doors by a wide margin

Many innovations concerning dies for the block machine have been made. These include a method of casting cores and bolting them to the corebars. These cast cores outwear steel cores, and are readily replaceable These cores and other die parts are

(Continued on page 109)

Lift truck designed by Verne Frese, partner in the Layrite firm

Used pallets are run through these rolls where they are cleaned and straightened



Left: Lindsay ready-mixed concrete operation includes sand and gravel washing and screening plant, right, in addition to batching facilities. Right: Aggregate weighing equipment at Visalia plant is located in wood structure at left of illustration. Cement is stored in 3000-sack silo and is weighed separately after which aggregates and cement are discharged simultaneously to mixer trucks

Decentralizing Batching Plants To Serve Small Market Areas

PACIFIC COAST AGGREGATES, INC., San Francisco, Calif., has ready-mixed concrete plants, distribution yards, and warehouses located at strategic points throughout the San Joaquin and Sacramento Valley area at San Francisco, Sacramento, Fresno, and Oakland. The company operates batching plants that are modern and of large capacity, and in the past descriptions of some of these outstanding operations have been published in ROCK PRODUCTS.

The Sacramento-San Joaquin Valley area is a very large one and includes within its boundaries some of the most productive farms in the United States. Where there is a prosperous farming area, there are always prosperous cities and towns. To serve this great and wealthy section, Pacific Coast Aggregates, Inc., has established smaller ready-mixed batching plants, as well as warehouses for building supplies and for aggregate sales.

Just south of Fresno are three smaller cities that are surrounded by rich agricultural areas that grow oranges, lemons, and grapes, as well as the more common farm products. Selma, the first of these three towns, is located about 16 miles south of Fresno; Visalia is about 24 miles south and a little east of Selma, and Lindsay is about 20 miles southeast of Visalia. At each of these towns the company has established or taken over previously existing concrete batching plants. The plants are small but efficient and could be used as an illustration to show the trend toward distribution of smaller plants to serve a respective district rather than a centrally located and larger plant to serve the complete area.

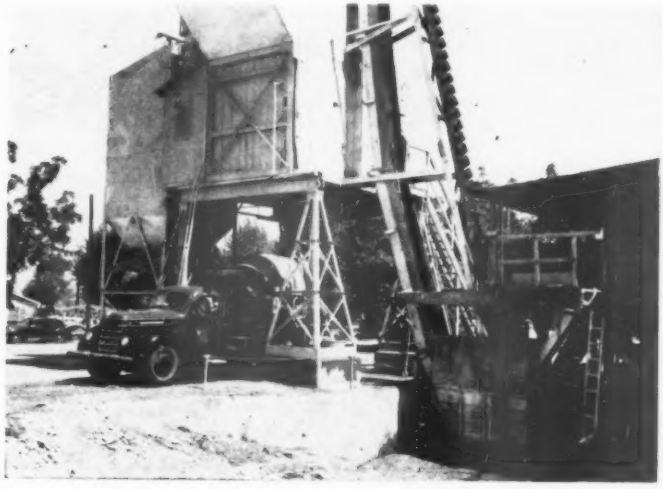
Delbert Searcy, Visalia plant operator, at batching equipment controls. Entire plant is controlled from this station. Note scales, left

The Selma plant is about a year old and features a Noble batcher with Kron scales. Bulk cement is delivered to the plant by truck, but aggregates are received in open cars from the company's washing plants. The cars are unloaded by a Brown clamshell rig. Six bunkers hold about 14 carloads of material and trucks can drive under the bins, as considerable aggregate is sold right from them. Aggregate for the batching plant is reclaimed by a belt conveyor located alongside the bunkers which delivers the aggregate to a bucket elevator and thence to the bins over the batching equipment. Alongside the main bunkers is a small warehouse for sacked cement and other building materials. In the batching set-up there are four hand gates for the aggregate, with cement gates operated by Noble air rams. Water is measured by a Neptune Meter Co. unit. Three men are employed here and the company keeps two 4-cu. yd. Smith mixers mounted on International trucks at the plant. More trucks can be sent to the plant from the larger operation at Fresno if necessary. Robert Cowan is manager at Selma.

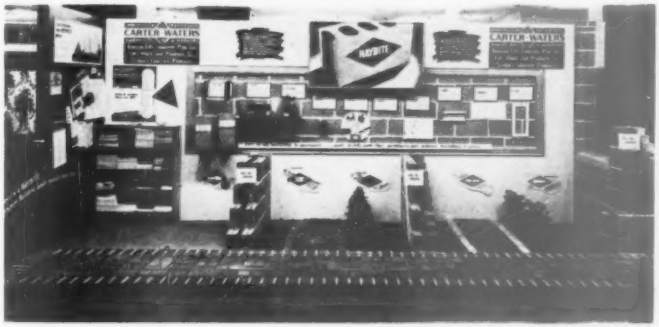
The plant at Visalia formerly was operated by the Spalding Lbr. Co. A. E. Anderson is manager of this plant and also has charge of sales for the Lindsay plant. The company uses four 4-cu. yd. Smith mixers at this

plant, all of which are mounted on International trucks, and as at the Selma operation, the Fresno reserve fleet of trucks can be used if needed. The Visalia plant is located along the Santa Fe rails, but most of the aggregates are trucked to the plant from the Lindsay washing plant. There are four aggregate bins at the scales which are located in the older structure. There the aggregates are weighed and the hopper dumps to a short inclined belt that elevates the material so that it falls into the mixer truck bodies. The plant was remodeled recently and a 3000-sack bulk cement silo that supplies a set of Noble cement weigh batchers was installed. Thus the aggregate and cement are weighed and added separately. The aggregate discharges to trucks from one direction and the weighed cement drops almost vertically to the trucks from the Noble weigh batcher. The cement weighing equipment is entirely automatic and controlled through an electric eye. Air rams are used for operating the cement gates. The entire assembly is so arranged that the operator can control the plant from one station.

The Lindsay operation formerly was a part of the old Grant Pacific Rock Co. and includes a sand and gravel washing and screening plant. B. Raulston is manager at Lindsay. The ready-mixed concrete plant features a Johnson Octo bin and Johnson cement and aggregate weigh batcher. Water is measured. The scales have four beams for the aggregate and one for cement. Bulk cement is trucked to the plant. No trucks are assigned to this plant and it calls on Visalia or Fresno for its daily needs. The plant is situated a few miles southeast of Lindsay on paved roads.



Aggregate for the Selma batching plant is reclaimed from bunkers, to left, by belt conveyor to bucket elevator and thence to bins over batching equipment. A 4-cu. yd. mixer is being charged



Booth of Carter-Waters Corp. at recent home show. This prize-winning exhibit was installed by the manufacturer of haydite and three lightweight block manufacturers

Concrete Masonry Sales Remain High

NATIONAL CONCRETE MASONRY ASSOCIATION reports that in spite of a marked reduction in industrial production throughout the United States, there was no definite lag in sales of concrete products in the first half of 1949 Sales have remained almost constant in comparison with 1948 figures, and in some cases have shown an increase. Factors which have favorably affected these sales are said to be sound promotion and merchandising, and the new market opened in construction of concrete floors.

Participate in Home Show

CARTER-WATERS CORP., Kansas City, Mo., manufacturer of haydite, lightweight aggregate, recently exhibited a large, attention-getting and very complete display of lightweight building units in a booth at a home builders show held in Kansas City. Three haydite block manufacturers in the area coöperated in presenting the exhibit. Backdrop of the display was devoted to a graphic presentation of ten advantages of haydite block construction. In addition to examples of several types of block and brick-and-block wall construction, the booth also contained an example of lightweight brick flooring.

Installs Perlite Furnace

THE J. P. LOOMIS COAL & SUPPLY CO., Akron, Ohio, has installed a Muehleisen perlite expanding furnace, in addition to its present plaster mill at Akron, for the production of expanded perlite ore in three sizes: concrete aggregate, plaster aggregate, and a finely-graded size for use in masonry paints and stucco. The expanded ore will be distributed throughout Ohio as Ohio Perlite.

Perlite products to be distributed will include Ohio-Lite Plaster, a material of perlite aggregate and neat plaster ready for use; and Ohio Surfaseal, a lightweight masonry paint or stucco to be made of the fines produced. It will be manufactured in white and pastel shades.

Other products manufactured by the company are cement finish, masons mortar and sanded plaster which formerly carried the brand name Akron. They now carry the brand name Ohio. With the expansion of business, a large fireproof addition to the plant now is being built. Construction of both the perlite plant and the additional factory space is under the supervision of R. L. Taylor, sales manager.

Block Home Book

COLUMBUS CONCRETE BLOCK MANUFACTURERS ASSOCIATION, Columbus, Ohio, has published a booklet containing 26 different designs for concrete masonry homes of contemporary style. Each design carries sketches of the exterior of the home and a floor plan.

Members and guests of the National Cinder Concrete Products Association as photographed

Cinder Concrete Products Producers Meet

Crushing and screening cinders, staining, merchandising, machinery developments considered at round table meetings

NATIONAL CINDER CONCRETE PRODUCTS ASSOCIATION held its annual meeting August 1-3, at the Claridge Hotel, Atlantic City, N. J., with about 60 registrants and wives. Several representatives of portland cement manufacturers were also present as well as machinery manufacturers. Harold L. Spaight, president, National Concrete Masonry Association, and E. W. Dienhart, executive secretary, N.C.M.A., were also among the guests.

Staining from Cinders

The technique of conducting these sessions was very simple. A chairman stated the subject to be discussed and, after brief preliminary discussion of the subject, those at the meeting carried the ball for practically the rest of the meeting. To illustrate, Harold Geist, of the Geist Coal and Supply Co., Cleveland, Ohio, was co-chairman, with H. H. Longenecker, secretary of the committee, in charge of the meeting at the opening session. Mr. Geist said that the first day's meeting would cover aggregates, aggregate handling and manufacturing problems. He led off with a somewhat provocative statement that the correction of staining of masonry walls by storage of raw cinders was somewhat of a false premise based on his experience. He felt that if staining was a problem and a producer was getting his cinders from several sources, that possibly one of these sources accounted for the damage and that source could be eliminated. Railroad cinders seemed to be the most questionable source of supply, although two members said that cinders from such coal were satisfactory. Bituminous cinders seemed to be more troublesome than anthracite cinders.

Herbert A. Davis, Washington Concrete Products Co., Arlington, Va., told of a wall that was 10 years old that stained. He painted it first with a coat of "Seal-Flex," then applied a coat of cement paint and, one year after, there was no sign of the stain re-appearing. H. H. Longenecker said that stockpiling of cinders for six months was not long enough and that one to one and one-half years was better practice. It was also brought out that wetting the stockpile of cinders was helpful, but wetting 60,000 tons or more of stored material was in itself another problem. One suggested lime treatment, or wetting with water and lime-water alternately. "Bondex" and "Thoro-Seal" were other stain-covering agents mentioned that had proven helpful in covering stains. One manufacturer mentioned that he sent out men to chop out defective block from walls for re-painting. He had no trouble with inside staining but the staining was worse on the weather side of walls. A producer in the Virginias who said he had no trouble with stains uses soft coal cinders obtained mostly from chemical plants. Gail B. Hamer, The Dayton Builders Supply Co., Dayton, Ohio, expressed the view that most staining was due to metallic iron and he recommended testing clinker for free iron. He said he had two magnets in his plant to remove free iron and that tests showed no free iron in the cinders. Another said he had a test made and it showed the presence of .005 percent Fe. One suggested that free iron could come from the portland cement. Another producer who had had trouble with stains and "popouts" attributed the former to the iron oxide and/or ferrous sulphate content (also possibly ferric sulphate) in the cinders. He said that there was a brown stain at the bottom of the pit left by the popouts and it was suggested that probably ground up fire brick that was incorporated in the cinder materials was the cause of the trouble. H. Hessey Miller, the "Cinder Man," entered the discussion at this point saying that one company pumped water over its stored cinders and that the cinders suffered as a result. The question was asked if anyone had had trouble from sugar in cinders—no answer. No anthracite stains were experienced by anyone. Coal from deep mining was best as regards staining from use of the cinders, according to one man's opinion. No comment was made to a question by the chairman regarding the possibility of curing eliminating staining and popping troubles. H.

at the group's annual meeting held August 1-3 at the Claridge Hotel in Atlantic City, N. J.

Hessey Miller thought that rust from gondolas and from truck bodies could be a cause of staining. He also said that he had a "secret" chemical that would solve all their popping and staining troubles but at the moment was not prepared to tell more. Later he asked those who had block that stained to chop out such a block and send it to him and he would endeavor to help them out.

Crushing-Screening Cinders

Chairman Geist then led the subject around to screening, leading off with a remark that he had to make several screen changes in an experimental way in order to get the capacity he wanted. John Fizzano said he had two Stearns 15's fed by mixers and that if the end gap in his mixer blades became large he had grinding troubles that caused excessive wear. He uses a ½-in. aggregate and his mixer blades just clear the liners. With the wide blade gaps he also had trouble with the mixer motor stalling from sudden overloads.

Gail B. Hamer told of the practices at his plant. He adds 10 to 15 percent sand to get 1000 p.s.i. compressive strength. He said he prepared his cinders in a New Holland crusher augmented by two sets of rolls—an 18-in. and a 12-in. set. At his Hamilton, Ohio, plant he has used slag instead of the sand with good results. He said he used 6 sacks of cement to a 44-cu. ft. mixer batch and that a 7-sack mix gave no better results. The concrete sand used gave a block that was 28 lb. in weight for the standard 8-in. size, had sharp edges and had a better texture. He uses a minus ⅜-in. cinder. Many others agreed that the addition of some sand gave a better looking block.

Herb Davis told of a plant that had trouble screening cinders during damp weather through a ⅜-in. screen so under such conditions a ½-in. screen was used. Mr. Geist, under similar conditions, uses more water on the screen so as to essentially wash the material through the openings.

Turning to the subject of surface texture of cinder block and its relation to sound absorption and sound insulation, it was brought out that one cannot get sound absorption and sound transmission in the same block. If the texture was coarse the sound would go through the block and one producer mentioned that smoke was even transmitted through a porous block and that obviously sound would go through it easily. If one wishes to prevent transmission of sound it could be done by a dense block or with a block having fine pores in it so that the sound would "bounce around" within the body of the block and sort of wear itself out. This brought out the fact that sound often vaulted over the walk or partitions via the floors or ceilings, which question in turn brought up the subject of precast floor and ceiling members, about which we will say more later.

George L. Oswalt, Forest Park, Ill., told of practice in his area where cinder block were used for backups so that control of height had not been too important. He held that dry pans were best for grinding cinders. He described the vibrating mechanism, applicable to Besser machines that his company had developed and which enabled increasing production to 900 block per hr. from a machine originally rated at 600.

E. W. Dienhart, of N.C.M.A., was of the opinion that 95 percent of staining troubles was due to green cinders. One said it was caused by "germs." Clem Beals spoke of trouble in applying acoustic plaster to clay tile. The plaster comes off and necessitates a re-plastering job. He felt this would not happen with cinder block.

Allan Miller, Cinder Block Material Co., Indianapolis, Ind., described his automatic quality control system which is sold through the M & M Engineering Corp., a subsidiary company. This device installed on Besser equipment gave uniform heights, improved textures, increased strengths and more speed. He said his system cost about $5000 per machine.

Merchandising

The session on the second day was presided over by Jack Freedman, Massachusetts Cement Block Co., Medford, Mass. The subjects considered were merchandising, advertising, sales and similar related subjects. Mr. Freedman pointed out that sales to dealers were becoming more important and, for such merchants, a 5 to 10 percent margin was allowed (depending on the material) with the calculation based on yard prices and yard pick-ups. He said pencils and calendars were given away in the Boston area to stimulate sales but felt that a more up-to-the-minute stimulant would be via television. He thought the market for cinder block would hold up for at least 5 years but said that this summer the "heat wave" had slowed down construction. He also pointed out the large market that home building offers and thought that if the cinder block producers obtained only 15 percent of the business that small home building offers, this would be sufficient volume to keep their plants busy. Gail Hamer asked what others were doing to go after this type of business and called attention to what the Buehner Bros., of Salt Lake City, Utah, were doing to stim-

ulate sales. Cinder block laid up by the small home builders themselves was becoming a factor, it was pointed out.

Many felt that the building of a cinder block demonstration house was excellent advertising and therefore good business. Some of the older block producers told of putting block in walls many years ago but for the reason that no one wanted to buy them at that time. J. E. Van Alsburg of the Lith-I-Bar Co. told of experience in his home area indicating that it was good business to get the craftsmen interested in a model home building program and they, too, would help sell the basic idea of cinder block. Harold Geist said he could not do a building job cheaper or better than a contractor. He and Gail Hamer both indicated they might build a model home for demonstration purposes.

Mr. Dienhart thought the question as to whether or not to enter the building game was mostly a matter of local conditions but the idea of a model home building program was a sound one and an excellent idea. During the discussion, the term "cheap homes" cropped up and it was pointed out that the industry should shy away from that term and use "low cost" instead. Mr. Dienhart said the subject of basements was an important one to the industry and they should sell basement construction. He pointed out that in some cases it cost $10 per sq. ft. for that section of a building above the basement, whereas it only cost 50c per sq. ft. for a basement. Pointing this out to home builders would result in a greater volume of cinder block sales, he thought.

A question was asked about the spread between what a manufacturer got for a standard cinder block and what a contractor asked for the block on an "in-the-wall" basis. It developed that 16c per unit was about average for the manufacturer whereas the contractor got 40c.

Harold L. Spaight told of conditions in his area (Cedar Rapids, Iowa). He said about 15 percent of the houses there were concrete block and one-half of these had concrete floors. Sam Paturzo said he thought the industry was making a mistake to include too many specialties instead of concentrating on the sale of concrete block. He also asked for a discussion on floor units. Mr. Dienhart said the F & A system of floor and ceiling construction was a natural for homes. He also mentioned the advantages of Flexicore, Prestcrete, Stresterete, and emphasized that there was no one best system. A manufacturer could push two or three systems advantageously. He briefly described the F & A system of floor construction sold by Roy Darden Industries as consisting of an inverted "T" joist with machine-made masonry floor units that resembled ordinary block except that the units have wings cast on both ends. The wings of the machine-made floor units fit into the joist construction very easily and simply. J. E. Van Alsburg, Lith-I-Bar Co., told of his company's joist machine that could make up to one mile of joists per day. He emphasized the density and strengths of joists made on his machine. He said the machines were not sold but were leased, pointing out, however, that the Lith-I-Block machine was sold outright. He mentioned a 20-ft. Lith-I-Bar machine that was highly suitable for residential work. This unit would make 6- and 8-in. joists of the "T" bar type.

The discussion on floors brought up the question of union requirements—who would lay the floor units, laborers, carpenters, masons, or who. Mr. Van Alsburg briefly described some practices he had encountered pointing out that carpenters and masons divided the work with no great amount of friction apparent. Mr. Fellabaum told of moving his joist machine right to a job which involved some 35 homes.

Mr. Dienhart closed the second day meeting with an outline of what the N.C.M.A. was doing for the producer, calling attention to the many older bulletins and the many new ones that were, or soon would be, available. He also felt out the assembly on a proposed group insurance program that was a presentation of the Prudential Life Insurance Co. Under this program a minimum of 1000 employes must be enrolled. The cost will be about $4 per month per employe. No physical examinations would be required, and the insurance covered $2000 life insurance protection as well as other sick and accident benefits. From Mr. Dienhart's brief discussion of this subject we are inclined to observe that such group insurance should be looked into by all members of the block industry as a progressive and humanitarian step and one which can only rebound to the financial benefit of both employer and employe. No discussion or vote was made on this presentation relating to group insurance.

Machinery Developments

The third and last day's session was presided over by H. H. Longenecker and this session was devoted to representatives of machinery manufacturers. The first to take the floor was Eugene F. Olsen, president of The Gene Olsen Corp., Adrian, Mich., and he first gave a brief outline of the history of the block industry. The first block machines came out in 1903, he said, and these produced at the rate of 5 block per man-hour. In 1915, power tampers appeared and production rose to 10 block per man-hour. In 1938, vibration was applied and production jumped to 50 block per man-hour and, in 1949, the production was equivalent to 100 block per man-hour. In 1903 workmen laid 400 block per day whereas now they place about 100 units in a wall per day. Mr. Olsen called his hearers' attention to the renewed interest in continuous mixers, pointing out that recent technological improvements have developed a method of mixing continuously so that control of the concrete is accurate and reliable. He pointed out that with continuous mixers only enough material for a few block is in the hopper over the block machine at any one time, and with controls in the hands of the machine operator, adjustments in the mix can be made quickly. This contrasted, he said, with having 40 to 50 cu. ft. of material in the mixer, which if poorly proportioned or out of balance would require that material would have to be worked through the block machine to the detriment of the manufacturer. He outlined the qualifications that a good block machine must have, saying that the machine should be of the vibrator type with vibration essentially in the vertical direction. It should be automatic and due to inevitable variation in grading, or moisture content, he thought the pressure head should function until it has brought the block down to the proper height. If the pressure head brings the block down to size a little faster or a little slower than normal, he said the block density would naturally be affected, and the machine should then automatically increase or decrease the feeding time of the next cycle. He said there was a proper place for a block machine of relatively low capacity (200 block per hr.) and that his company produced machines capable of producing 3½, 7, 12, and 24 block per minute. Mr. Olsen said his company produced a machine called the "King" (24 block per minute) and it sold for around $25,000. The "Senior" produced 12 block per minute and it sold for approximately $18,000. The "Junior" is made in two sizes, he said, (a) a single block machine and (b) a twin. The first makes one block per cycle and the other two block. He mentioned several places where his machines had recently been shipped. He called his hearers' attention to continuous mixers as exemplified by the Yoder Co., Cleveland, Ohio, where vibration was applied to the bottom of the feed belt so that uniformity was obtained that was as accurate as weigh batching. He said his company did not make a continuous mixer but he felt this type of mixer was faster and a labor saver. A continuous mixer for 25 cu. yd. per hr. sells for around $3800, the speaker pointed out. Admixtures can be fed to the circuit by another feeder with all controls in the hands of the block machine operator so that he can start or stop each part of the assembly as is needed. He said rubber-faced paddles in mixers were working out all right. Jack Franklin, Besser Manufacturing Co., outlined what was on the horizon with his company stating that improvements in handling the block after they left the machine was a part of their development program; that it was entirely possible in the not too distant future that block manufacturing would be, or could be, entirely automatic. He said his company was

also engaged in developing new products.

Clem Beals, Springfield Cement Products Co., Springfield, Ohio, told of the pallet cleaners that his company had developed and which are now on the market. The pallet cleaners are for use on Besser machines only and he said they sell for $1500 net. He said his pallet cleaner consisted of a combination of a slow moving spiral cutter and rapid vibration. Tension on the spiral cutters is adjustable and no extra motor is required for its operation. The unit is sold by an affiliate company called the Springfield Pallet Cleaner and Mfg. Co., Springfield, Ohio.

J. Pitha, Bergen Machine Tool Co., Nutley, N. J., told the audience of his company's pallet cleaner and oiler which the company sells or rents. It uses a revolving wire brush, 8 in. in dia. at 400 r.p.m., followed by three rubber-covered rolls. These rolls act as the oil applicators. He said the unit used one to one and one-quarter gallons of a No. 10 oil per hr. It is applied to Besser Vibrapacs only and the unit sells for $675.

Mr. Franklin said his company also had an oiler that now uses a single spray nozzle instead of four as before. He recommended a soluble oil diluted with 4 to 5 parts water and said the spray used 4 to 6 gal. of oil per day.

J. H. Van Alsburg, Lith-I-Bar Co., Holland, Mich., showed moving pictures of several installations where his company's Lith-I-Block machine was in operation. He said his machine was manufactured in several sizes; the 2-block per pallet machine made 480 block per hr. and the 3-block machine could turn out 720 units per hr. He said, in answer to a question, that the 3-block machine sold for about $17,-500. He described the machine as one that occupied very little floor space with low head-room requirements. It used, wherever possible, parts (such as bearings) that could be obtained at any automotive parts dealer and he said that the machine could be supplied fully automatic. Control, he said, was in the "grips" of the off-bearing unit. Vibration is applied to the side of the mold box with additional agitation within the mold box by a reciprocating rake or shaker. He stressed the fact that the block machine is sold outright, but that the company's joist machine was on a lease basis only.

The concluding speaker was William Hansen, Stearns Mfg. Co., Adrian, Mich. Mr. Hanson described his company's sinterlite machine for making artificial lightweight aggregates. He said the sintering portion of the machine was 18 ft. in dia. and consisted of 24 segments or "pie-shaped" pans, each about 5 in. deep and with grate bottoms. The circular portion revolved in a horizontal plane but on an intermittent basis. As a compartment is filled with the raw material mixed with some solid fuel, the segment goes under a hood and is subjected to an oil-fired flame that ignites the coal in the mix. The draft is downward and is supplied by a suitable fan and draft hood under the segments. As the sintering wheel revolves, the material is brought to an incipient fusing point and at the completion of the cycle the mass is automatically dumped and then conveyed to ground storage. He said that 4 percent (by volume) was burned in the processing and that some raw materials used much less fuel than others. Shales, clay, quarry strippings, etc., could be used as the raw material and would provide a suitable lightweight aggregate. Fly ash, he said, made a very satisfactory raw material and it required less fuel to burn it. Mr. Hansen mentioned places where his company's machine would soon be installed.

Research

(Continued from page 103)

made by the Truax Machine & Tool Co. in Seattle.

The Truax Machine & Tool Co. also manufactures the lift truck designed by Verne Frese. This truck, designed to operate in an unpaved yard, is powered with a 95-hp. Chrysler industrial engine. It uses either 7.50 x 16 or 8.25 x 15 tires. The truck can carry a 6000-lb. load and is maneuverable enough to go into a boxcar. The Spokane and Kennewick operations each use one of these trucks. The Seattle plant uses three.

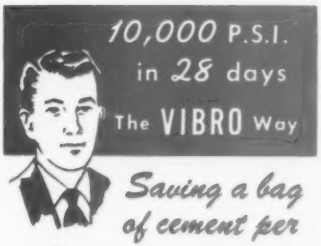
The Spokane plant has developed a set of power-driven rolls through which the plain steel pallets used in the Besser machine are occasionally run. One of the lower rolls is corrugated so that the pallet vibrates quite violently as it goes through. At the same time the rolls straighten out any unevenness or bends in the metal. The result is a clean, straight pallet. All three plants use these rolls.

The Seattle plant has developed a breaking machine (also manufactured by Truax) to break 2-in., 3-in., or 4- x 8- x 16-in. solid pumice block lengthwise to produce a unit called Laytile. It can be used as a veneer, in a cavity wall, or as a solid masonry wall either in plain or ashlar patterns. This gives a texture resembling cut stone.

This plant has also developed many special block. These include an 8- x 8- x 16-in. bond beam unit, and a special lintel block that gives a deeper than ordinary beam, spreading the reinforcing steel for lateral stability, and providing more compressive area in the concrete above the neutral axis.

All block are handled in cubes with the exception of a few specials which are pallatized. In Seattle the block are delivered by three company-owned trucks, and three leased trucks. Most of the trucks are dual drive six wheeler units.

Quality in the Seattle plant is maintained through a daily spot check by Mr. Beardsley. He selects block at random and breaks them on a company designed 400,000-lb. compression machine.



Saving a bag of cement per cubic yard of concrete

More than 75 % of form costs...

A recent job involving the manufacture of 1400 heavily reinforced concrete gratings for Airport drainage, obtained these results by using two VIBRO-PLUS TOP DOG VIBRATORS. Two forms produced thirty (30) castings a day.

To avoid the entraining of air, a harsh mix of 2.2 gals. of water per sack of portland cement was used. The problem of distributing the concrete was an acute one, because of the heavy reinforcing and resulting small pour space. Two VIBRO-PLUS Top Dog vibrators solved this problem by rendering the concrete in this mold fluid; and consolidated the dry harsh concrete mixture by PRECISION VIBRATION.

USES: Pipes, gratings, septic tanks, and other specialty forms, also chutes, bins, hoppers.

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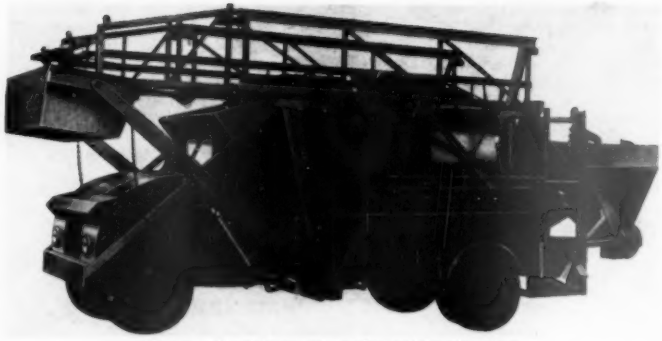
NEW MACHINERY

Mobile Mixing Plant

MIXERMOBILE MANUFACTURERS, Portland, Ore., has announced the 1-cu. yd. mixermobile, Model M-6, which is a complete mobile concrete mixing and elevating plant. The unit has a hydraulically operated self-loading skip for receiving batched aggregates directly from dump trucks, portable batching plants, or front-end loaders. Although designed for 1-cu. yd. batches, the mixing drum allows for overage. The unit has a standard 35-ft. steel tower, with 10-ft. extensions available. From the mixing drum, the mixture is transferred by a dumping "spoon" into the elevating bucket, then hoisted and poured into the storage hopper. Power is furnished by the truck motor, an 8-cylinder Ford industrial engine. A take-off unit transmits the truck motor power for loading the drum, mixing and hoisting. Folded for traveling, the unit is 24 ft. long and 12 ft. high. It weighs 20,000 lb., is said to pass within highway limitations anywhere in the United States and complies with the standard truck highway speeds.



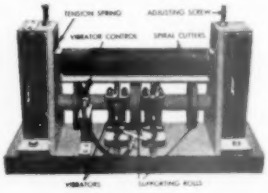
One-cu. yd. mobile concrete mixing and elevating plant

Designs New Type Mixer

GLENWAY MAXON, JR., consulting engineer, Milwaukee, Wis., has announced development of an improved version of a standard large on-the-job type of concrete mixer. A preliminary model is being set up at the Kolinski Concrete Co. According to Mr. Maxon, the 3-cu. yd. unit is mounted on a trailer, as compared with models which are erected on flooring, so that the unit can be hauled to a job and be ready for work in a few hours. Concrete is poured by raising the bottom of the unit, instead of tipping the mixer. Milwaukee Reliance Boiler Co. is manufacturing the mixer.

Automatic Pallet Cleaner

SPRINGFIELD PALLET CLEANER & MFG. CO., Springfield, Ohio, has announced the Beals pallet cleaner which is designed to clean pallets automatically as they are used in the concrete block machine. The combination of slow moving spiral cutters and rapid vibrators is said to be highly efficient in removing accumulated concrete. No motor or additional power is required as the vibrators operate from the air compressor on the block machine. Tension on the cutters is adjustable by means of set screws and heavy coil springs. Working parts are made of special alloy steel, and it is reported that 40,000 pallets have been cleaned on one cleaner without any indication of appreciable wear on cutters.



Pallet cleaner operates with block machine

Calcium Chloride Pellets

THE DOWFLAKE SALES DIVISION of The Dow Chemical Co., Midland, Mich., has started large-scale production of calcium chloride in pellet form. Packed in 100-lb. moisture-proof bags, the new pellets are an anhydrous formulation (96 percent) of buckshot size.

Mixer Blades

STEARNS MANUFACTURING CO., Adrian, Mich., is producing Ni-Hard blades for its line of concrete mixers. Ni-Hard is described as a nickel-chrome alloy, very hard and abrasion resistant, that will give unusual wear.

*CONQUER those Handling Costs!
... as the quickest, surest way to bring down unreasonably high production COSTS!

To find and realize *your* opportunities for *big* savings in this incomparably rich field,

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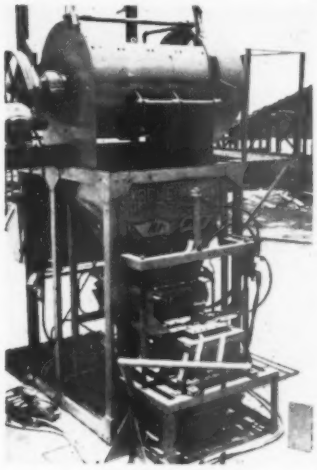
THE NATIONAL GUARD DEFENDS AMERICA—JOIN NOW

Two Block Machine

J. W. APPLEY & SON, INC., St. Petersburg, Fla., is presenting the Appley-Yellen two-block machine with forming head, furnished either com-



Complete installation of skip hoist, mixer and block machine with forming head

pletely automatic or semi-automatic. The automatic unit functions in a complete cycle of 4 to 20 sec. of uniform operation, with a capacity of 4000 to 4500 concrete block per day. Normal output of the semi-automatic machine is between 3500 to 4000 units per day. The machine is equipped to make standard and special block with merely a change of cores and head plates.

A power ejector which can be attached to the Appley Little Giant machine is also being developed. In this unit the cycle of ejection is predetermined and stops itself automatically at the end of each machine cycle.

A 28-cu. ft. mixer, using a 15-hp. motor, with sectional liners or with a rubber-lined drum, has been added to the company's line of equipment. All mixer blades are rubber-coated.

Masonry Saw

VICTOR ENGINEERING CORP., Bristol, Penn., has announced the Valor masonry saw which is said to be light, portable, yet strong enough to stand up under rough handling. The device weighs 225 lb., and the $1\frac{1}{2}$-hp. motor drives both water pump and blade for dry and wet cutting. The automatic blade pressure control, a feature of the Feedmatic saw designed by this manufacturer, is also embodied in the new model. Other features are a built-in foot pedal arrangement which allows a much greater head-throw, and instant head removal for easy handling. If additional head positions are desired for varying material heights, there are 10 different positions available.

Faster Digging with UNIT 1020

UNIT takes a deep bite . . . swings fast and easy . . . moves dirt in a hurry. That's why it is the preferred excavator . . . used extensively all over the nation. Engineered for the really tough jobs with drop forged alloy steel gears and shafts completely enclosed and oil-sealed in UNIT's exclusive One-Piece Gear Case. Straight line engine mounting . . . Automatic traction brakes . . . Disc type clutches. UNIT's modern Full Vision cab promotes SAFETY, speeds up job. Investigate today!

Quick change in the field to any desired attachment: Shovel . . . Crane . . . Clamshell . . . Dragline . . . Trenchoe . . . Magnet . . . Grapple.

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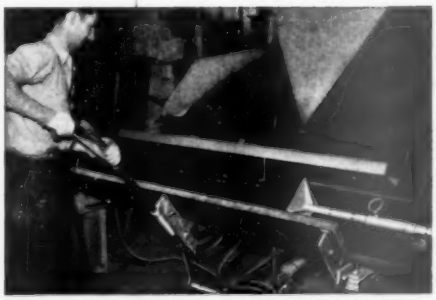

Batch Mixers—
Continuous Mixers—
Strippers—
Tampers—
Feeders—
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Racks—
Pallets—
Pallet Dunkers—
Lintel Machines—

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The Only Lintelator Machine Available

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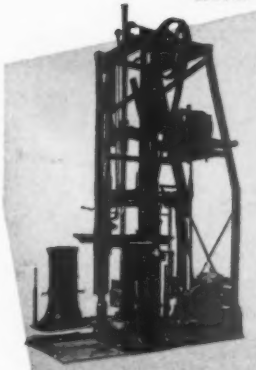
Increase your MARKET!

with Dixon Pipe-Making Machines



The NEW Dixon Model C Hydraulic Pipe Machine produces 3 and 4-foot joints that exceed ASTM specifications at higher speed, with smaller crews and less operating expense.

Now you can turn out 4 to 15-inch bell and spigot or 6 to 16-inch tongue and groove pipe at highly competitive prices and still maintain reasonable margins of profit.

Full production crews produce 1,200 to 3,000 feet, 16½ to 57 tons of pipe per 8-hour day.

With the Dixon Model "B", 4-man crews produce 80 joints (240 feet) of 4 to 12-inch B & S and 6 to 12 inch T & G per hour.

Dixon Packerhead Pipe Machines, Pipe Bend Machines, Spiral Blade Mixers, Belt Conveyors, Septic Tank Molds, and Off-Bearing Carts. For full information write to:

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Built to Handle 90-BLOCK RACKS

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Faster Block Handling - at Lower Cost

It will open your eyes to see the way these sturdy Erickson Lift Trucks with powerful International Engines handle a rack of 90 8x8x16 blocks. They pick up the racks from the ends, and place them close together in the kilns. Big pneumatic tires assure traction over unpaved runways. You can increase your output, reduce breakage, and lower handling costs with an Erickson.

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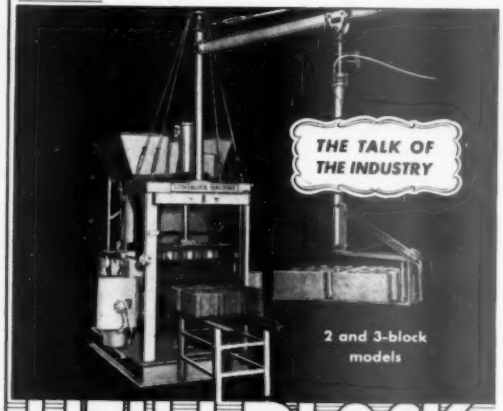
IF YOUR GOAL IS

- LOWER PRODUCTION COST
- MORE BLOCKS PER DAY
- BETTER QUALITY PRODUCT

Then here's your machine



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1949 Columbia
Block Machine

Controlled Vibration with Synchronized Pressure

Oil Hydraulic

Three Sizes Model 8, 4, 3

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Plain Pallets

All Regular and Special Blocks

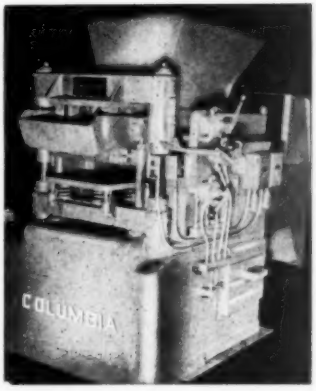
Makes 2-8x8x16 or 3-6x8x16 per pallet

4 Pallets per Minute

Any Type Aggregate

Rugged Construction

Modern Design



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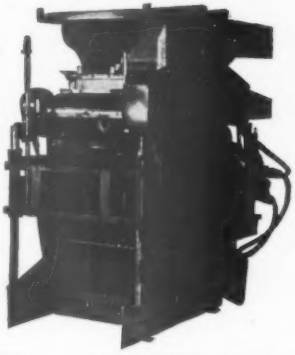

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"While you rate them at 180 per hour, we are presently running both machines at a rate of 240 blocks per hour on each. Our total labor cost in the kiln is 1½ cents per block."
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THE PLAIN PALLET VIBRATOR AT LOW COST!

COMPLETE BLOCK PLANTS ENGINEERED TO YOUR REQUIREMENTS

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Three Clipper Strippers—Bargain prices. All guaranteed to be in first class condition. Thousands of steel and cast-iron, cored pallets.

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1—APPLEY "Little Giant" Vibrating Block machine with electric motor, feed drawer, manual offbearer, hand lever stripper, starter, switch, (on and off) push button control, cores for making three different size block—4", 8" and 12" sizes—all complete and in as good as new condition (FREE OF CHARGE) when you buy all the pallets that come with the machine—Pallets cheap.

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Peerless Turbine Pump and Panel 150 HP—Capacity 3060 gpm. 160' head. Used from July 1947 to November 1948. In excellent condition. F.O.B. cars Yakima at $1500.00. New Factory Price—$4,000.00.

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1 Clipper stone saw (Model No. E1) ½ H.P. motor—push-button control—completely rebuilt.
Champion Drain Tile Machine—model C-89, No. 133—makes 4 to 7 tile per minute (12" R—4"D). Complete with 3 H.P. motor and control. Machine only very slightly used—practically new.

PLASTICRETE CORP.
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Will sell or trade high production block machine for machine with production of 1000 per day.

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6-inch curved mold box for Stearns Clipper Stripper. New. $100.00 f.o.b. Frederick, Md.

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One 600 cubic yard capacity, 8 compartments; 34 ft. Hex shaped mounted on 14" H-Beam, 67 ft. long; Batching Equipment, Water Batcher; Collectors, two, 2 yard Smith Mixer, Cement Elevator, about 300 ft. 24" Sand Conveyor with under truck feed conveyor; Hot water equipment, Air compressors, Heating Plant, Office Equipment. A plant built about two years ago and on account of its location was condemned and only was in operation about a month. Sold on Court Order. The plant is complete and is for sale at less than one half of the cost. If you are contemplating building a ready mix plant it will pay you well to come and see this before buying.

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International model KBR-11 trucks suitable for mixer mounting. Also several dumps.

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1—Kirkham Vibrator Machine with motor
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4"-6"-8" Mold Boxes.
1200—Pallets (all work with any of the above molds).
Price $1000.00 or best offer.

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Success Down Face Stripper Block Machine. For 8x8x16 in. Plain blocks; Rock face and Pan blocks. Machine in good working condition. Capacity 8 hrs. day, 600 blocks. Price $800.00

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1½ yards as mixer
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Truck—International D-40 (1937)
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Completely overhauled

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One Myles block machine with pallets, $700.00.

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1—8x5x12 Attachment for Besser Super Vibrapac. Makes 4 units at one time. Used very little.

HINIKER BLOCK & TILE CO.
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1 Korpak Block machine
1200 Pallets for same.
11 Cars and 1 lift Jack.
Best offer takes. Subject to prior sale.

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DunBrick Machine—Complete Racks, Pallets, Mixer, all attachments original cost in '47 $11,500.00. $5,750.00 or highest bid. Franchise included if necessary. Approx.: 1300 S.S. Pallets at 24c each. 7⅝"x7⅝"x15⅝".

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PACKER-HEAD WINGS

McCracken Type — PROVED to last as long or longer — yet cost considerably less. Write for prices.

TEXAS FOUNDRIES
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A used 2 unit George Super "V" Dual Vibrator Block Machine with Press Pac, and electric motors. A self-fed storage hopper and a set of partition block attachments. With this we have 1500 8x8x16 pallets, 250 Pilaster pallets, 250 4x8x16 pallets that go with the machine. Our reason for selling is that we have a new and larger George block machine. Best offer takes all.

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One—Barber Greene type "U" conveyor, purchased in 1936 and used very little (still has the original paint). Equipped with 4½ horsepower Stovers engine type CT4, speed 550, motor number TD 233876, about 25 feet long, and has height adjuster.

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One used Besser Vibra-Pac with over $11,000 worth of attachments. Also pallets. Box H-87, Concrete Products, 309 W. Jackson Blvd., Chicago 6, Ill.

FOR SALE

Korpak Block Machine, Dunbrik Brick Machine, 10 cu. ft. mixer. All other equipment for complete block and brick manufacturing plant.

EASTWOOD SAND & GRAVEL WORKS
Grayville, Illinois

UNBREAKABLE PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

CEMENT COLORS—Write for samples and prices of **"LANSCO" CEMENT COLORS** in bright shades of RED, YELLOW, GREEN, BLUE, BLACK, BROWN. Manufactured by

LANDERS-SEGAL COLOR CO.
73 Delevan St. Brooklyn 31, N. Y.

CONCRETE BRICK COLORS
CEMENT COLORS
MORTAR COLORS
made by
BLUE RIDGE TALC CO., INC.
Henry, Virginia

FOR SALE

Granule — Crete

Granules in beautiful colors for Concrete Blocks, write for prices, etc.

Advance Industrial Supply Company
166 W. Washington St., Chicago 2, Ill.

1 STEARNS 18 CU. FT. MIXER WITH NEW SET OF GEARS, CLEANED AND NEWLY PAINTED.

$300.00

Wm. M. CHASE (Dealer)
15 Linwood Ave. Buffalo 2, N. Y.

IDAHO WHITE PUMICE

A car load or a train load. Our supply is unlimited. (Processed ready to use.) This same pumice used in Blocks to obtain Fire Underwriter's R-4 approval.

POCATELLO PUMICE COMPANY
231 W. Center St. Pocatello, Idaho
Phone 555

—BUSINESS OPPORTUNITIES—

FOR SALE

File 1921—Cement Block Plant at Ionia, Michigan. Well established and running nearly $50,000 yearly, excellent modern equipment. Available at $20,000 including real estate or will lease property. Also have several other attractive propositions. For full information on block plants in Michigan write

Building Material Dept.

Associated Business Brokers
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Grand Rapids, Mich.

FOR SALE

Dunbrick Plant completely equipped, capacity 10,000 bricks per day. Buildings cover 3500 sq. feet, steam curing system, no competition, will consider any reasonable offer for cash—machinery or Real Estate, or sell on terms to suit experienced operator who could add a good block machine capable of producing 1500 blocks per day.

W.M. THOMASON
503 Court Bldg. Evansville 19, Ind.

PALLET CLEANER

HAVE YOU SEEN OUR NEW PALLET CLEANER?

AN AUTOMATIC MACHINE FOR REMOVING CONCRETE "BUILD-UP" FROM PLAIN PALLETS. Cleans on 18½x26" Pallet in 12 seconds.
Write for Free Literature

BERGEN MACHINE & TOOL CO., INC.
189 Franklin Ave., Nutley 10, N. J.

Use a classified ad in these columns for quick and economical results to buy or sell—send copy now.

FREE SERVICE *for BUYERS*

Here is the quick way to get information and prices on machinery and equipment. Just check the item (or items) listed below about which you desire information. Then send this page to us, and we will take care of the rest.

TEAR OFF HERE

- .....Admixtures, Aggregate
- .....Aftercoolers, Air
- .....Aggregates (special)
- .....Air Compressors
- .....Air Separators
- .....Asphalt Mixing Plants
- .....Bagging Machines
- .....Bags
- .....Barges
- .....Batchers
- .....Belting, Conveyor, Elevator, Power Transmission
- .....Belting, V-Type
- .....Belt Repair Equipment
- .....Bin Level Indicators
- .....Bins and Batching Equipment
- .....Blasting Supplies
- .....Block Machines
- .....Concrete Building
- .....Bodies, Trailer
- .....Brick Machines and Molds
- .....Buckets
- .....Bulldozers
- .....Cars, Industrial
- .....Classifiers
- .....Clutches
- .....Coal Pulverizing Equipment
- .....Concentrating Tables
- .....Concrete Mixers
- .....Concrete Mixing Plants
- .....Concrete Specialty Molds
- .....Concrete Waterproofing and Dampproofing
- .....Conveyors
- .....Crushers
- .....Coolers
- .....Cranes
- .....Derricks
- .....Dewatering Equipment, Sand
- .....Diesel Engines
- .....Dragline Cableway Excavators
- .....Draglines
- .....Dredge Pumps
- .....Drilling Accessories
- .....Drills
- .....Dryers
- .....Dust Collecting Equipment & Supplies
- .....Electric Motors
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- .....Explosives & Dynamite
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- .....Gasoline Engines
- .....Gear Reducers
- .....Generator Sets
- .....Grinding Media
- .....Gypsum Plant Machinery
- .....Hard Surfacing Materials
- .....Hoists
- .....Hoppers
- .....Kilns: Rotary, Shaft, Vertical
- .....Locomotives
- .....Lubricants
- .....Mills
- .....Pulverizers
- .....Pumps
- .....Scales
- .....Screen Cloth
- .....Screens
- .....Scrubbers: Crushed Stone, Gravel
- .....Shovels, Power
- .....Speed Reducers
- .....Tanks, Storage
- .....Tractors
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- .....Trucks, Motor
- .....Vibrators
- .....Welding & Cutting Equipment
- .....Winches
- .....Wire Rope

If equipment you are in market for is not listed above, write it in the space below.

_____

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Send to:

Research Service Department
ROCK PRODUCTS
309 W. Jackson Blvd. • Chicago 6, Illinois

Your Name..... Title.....

Firm Name .....

Street .....

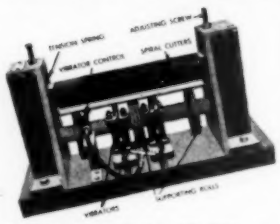
City ..... State.....

CP-9

PALLET CLEANER

Beals

- Cleans pallets automatically
- Insures more perfect blocks
- Saves time, labor and expense
- Earns extra profits for you
- Makes better-satisfied customers



Requires no motor or additional power . . . vibrators operate from air compressor on your present cement block machine.

The combination of slow moving spiral cutters and rapid vibrators is highly efficient in removing accumulated concrete. Tension on spiral cutters is fully adjustable by means of set screws and heavy coil springs. For exceptionally dirty pallets, tension may be quickly and easily increased. After two weeks of running through the machine, even the dirtiest pallets become clean.

Under average operating conditions with normal usage, cutters and rolls should operate efficiently without replacement for many months. One operator reports having cleaned over 40,000 pallets without any indication of appreciable wear on cutters.

The BEALS Pallet Cleaner is shipped assembled, complete with instructions for installation. Can be installed by your own crew in about eight hours. Complete machine weighs approximately 900 pounds.

SPRINGFIELD PALLET CLEANER AND MANUFACTURING COMPANY
501 Southwood Drive, Springfield, Ohio

CEMENT DRAIN TILE

Money-Making Manufacturing Opportunity

Today's tremendous demand for drain tile opens up a choice field for the wide-awake concrete products manufacturer. Either as a business by itself or as a profitable addition to the regular line.

The Champion machine makes all sizes of tile up to 12-inch diameter. With such a range you can supply not only the huge farm market, but many others where drain tile is urgently needed—reclamation projects, home building, road construction, subdivision activities, etc.

Low Cost—High Profits

Tile made on the Champion are outstanding in quality—dense, strong, uniform. Far better than clay tile yet can sell for less—even after allowing a handsome profit. Machine is simple, compact, easy to operate.

Get the facts. Write for interesting literature about the business and the moderate priced equipment.

CONCRETE EQUIPMENT CO.
562 Ottawa Ave., Holland, Mich.

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Here's the rugged profit maker you've waited for!

APPLEY-YELLEN

HI-SPEED VIBRATOR BLOCK MACHINE WITH FORMING HEAD

●

PROVED! SIMPLE! FAST! LOW INITIAL INVESTMENT!

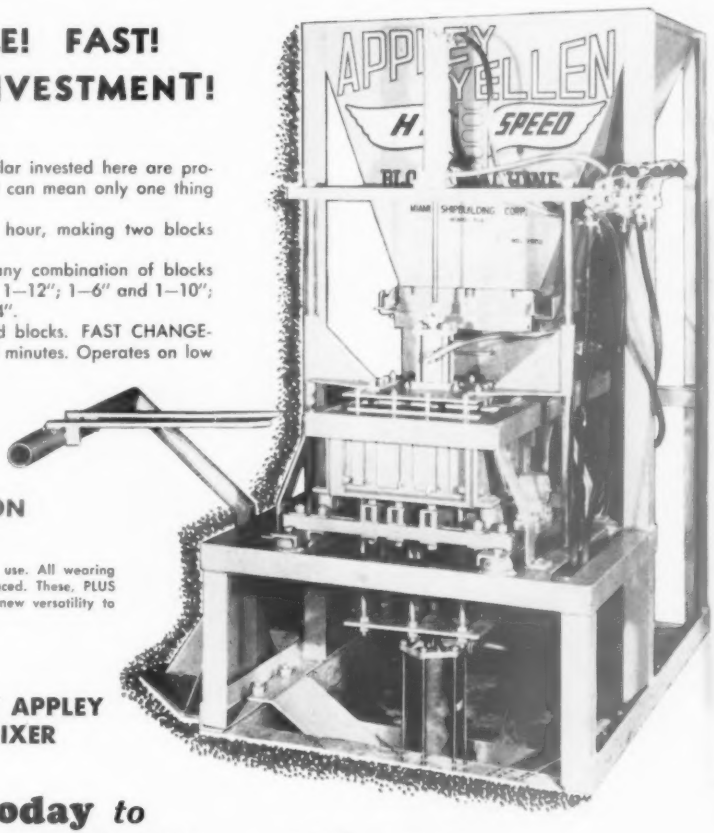
●

Block for block . . . dollar for dollar invested here are production values and economies that can mean only one thing . . . BETTER PROFITS!

Capacity: 400 8x8x16 blocks per hour, making two blocks per operation.

Or: At the same rate will make any combination of blocks totalling 16x16, such as: 1—4" and 1—12"; 1—6" and 1—10"; 1—16"x16"; 1—8" and 2—4"; 4—4".

Uses any standard pallet for cored blocks. FAST CHANGE-OVER to any standard block in 30 minutes. Operates on low pressure air. Finger-tip controls. No skilled operator necessary. Quiet and easy on operator.



VERSATILE PRODUCTION
Proved in the Field

Ruggedly constructed for hard and heavy use. All wearing surfaces quickly, easily, economically replaced. These, PLUS the quick change-over, give your plant a new versatility to meet production needs on short notice.

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OPERATES WITH ANY APPLEY SKIP HOIST OR MIXER

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Write **Today** *to*

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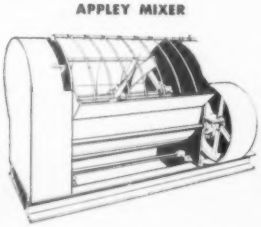
APPLEY SKIP HOIST

J. W. Appley and Son, Inc.
P.O. Box 849, Station A
St. Petersburg, Florida

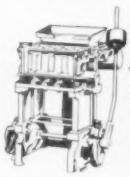
APPLEY MIXER



or

D. M. Ward Division of
Miami Shipbuilding Corp.
615 S.W. Second Avenue
Miami, Florida

APPLEY LITTLE GIANT



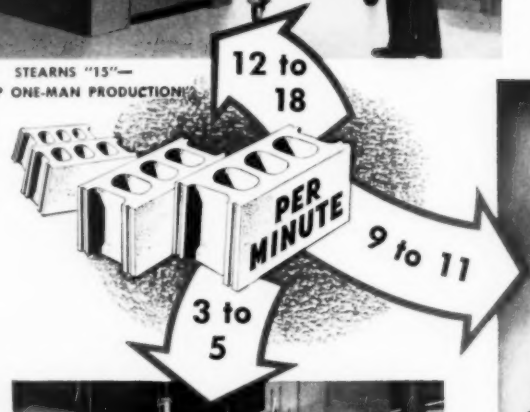
BLOCKS, BLOCKS and MORE BLOCKS!

STEARNS "15"—
"TOP ONE-MAN PRODUCTION!"

from the

Stearns

PROFIT-MAKING TRIUMVIRATE!



JOLTCRETE—"NO BETTER BLOCKS!"

CLIPPER STRIPPER—
"BIG RETURNS—SMALL INVESTMENT!"

Here are three famous, tested and proven concrete block making machines of different capacities. Each is a champion in its class. All are built to make greater profits for you. Stearns equipment will give maximum production at the lowest unit cost. Stearns consulting engineers will help you plan a new plant or modernize an old one for the most efficient operation.

MODERNIZE WITH A STEARNS! BACKED BY MORE THAN A QUARTER-CENTURY OF KNOW-HOW

STEARNS
MANUFACTURING COMPANY · INC
ADRIAN • MICHIGAN

STEARNS 15

JOLTCRETES

CLIPPER STRIPPERS

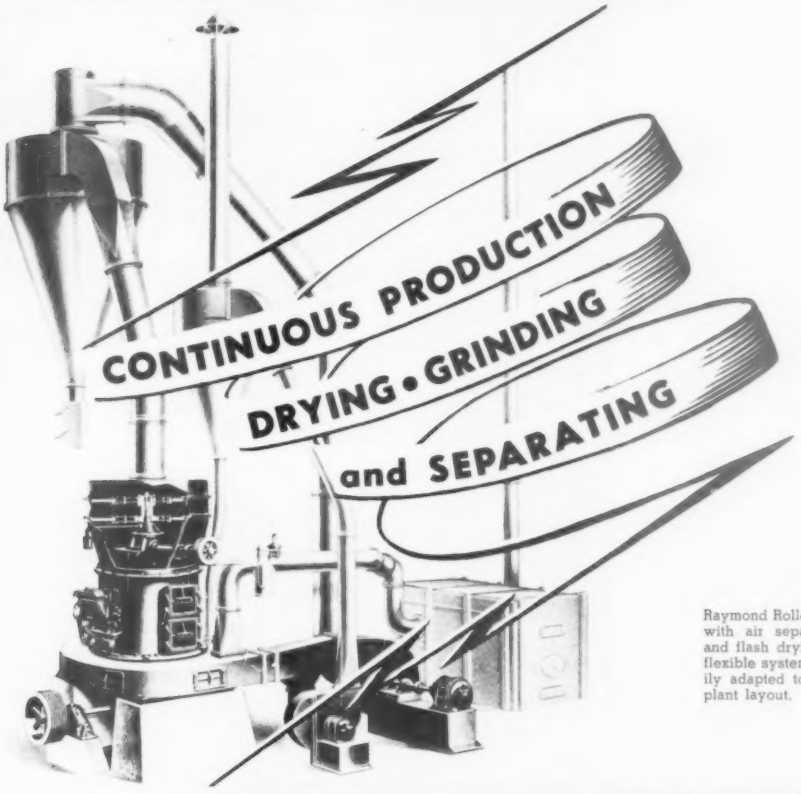
MIXERS

SKIP LOADERS

TURNTABLES

SINTERLITE

RAYMOND ROLLER MILL



Raymond Roller Mill with air separation and flash drying. A flexible system, easily adapted to your plant layout.

with FLASH DRYING . . .

Here is a fast, economical method of producing powdered materials in a single unit of equipment . . . no separate dryers or auxiliary conveyors.

It is a continuous, automatic, dust-free operation from feed hopper to finish bin . . . with no re-handling of the material from one unit to another.

Write for details and tell us your requirements.

This combination includes the latest type of Raymond Roller Mill with whizzer separator, and Flash Drying.

It offers special economies in non-metallics industries for pulverizing raw materials such as limestone, gypsum, clays, barytes, phosphate rock and similar products.

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RAYMOND PULVERIZER DIVISION
1307 North Branch Street, Chicago 22, Illinois
Western Office: San Fernando Bldg., Los Angeles 13
Eastern Office: 200 Madison Ave., New York 16

DIG REAL DIVIDENDS!

WELLMAN
Williams Type
Welded Buckets

Operators prefer the Wellman Bucket for its balance, easy handling, and digging power. Owners prefer the Wellman Bucket for its bigger payloads, lower maintenance cost. These features are not accidental. Wellman pioneered in welded construction of rolled steels which make these buckets lighter, stronger, for greater yardage at lower costs. In all types and sizes, you'll do better with a Wellman!

There's a Wellman Bucket for every service

THE WELLMAN ENGINEERING COMPANY
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FLEXCO
HD
BELT FASTENERS AND RIP PLATES

FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

Flexco HD Fasteners make a tight, butt joint of great strength and durability . . . distribute the strain uniformly. Operate smoothly over flat, crowned or take-up pulleys. Made of steel, Monel, Everdur and Promal.

Flexco Rip Plates are for repairing and patching damaged belts.

Ask for Bulletin F-100

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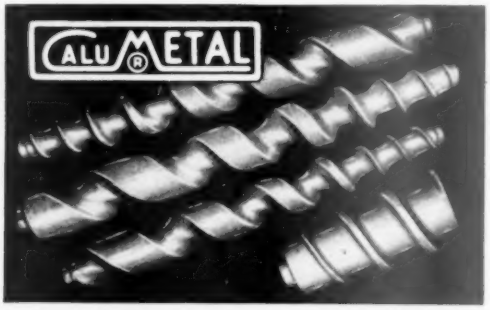
4684 Lexington St., Chicago 44, Illinois

Strong, Smooth and Readily Troughing.
Order From Your Supply House



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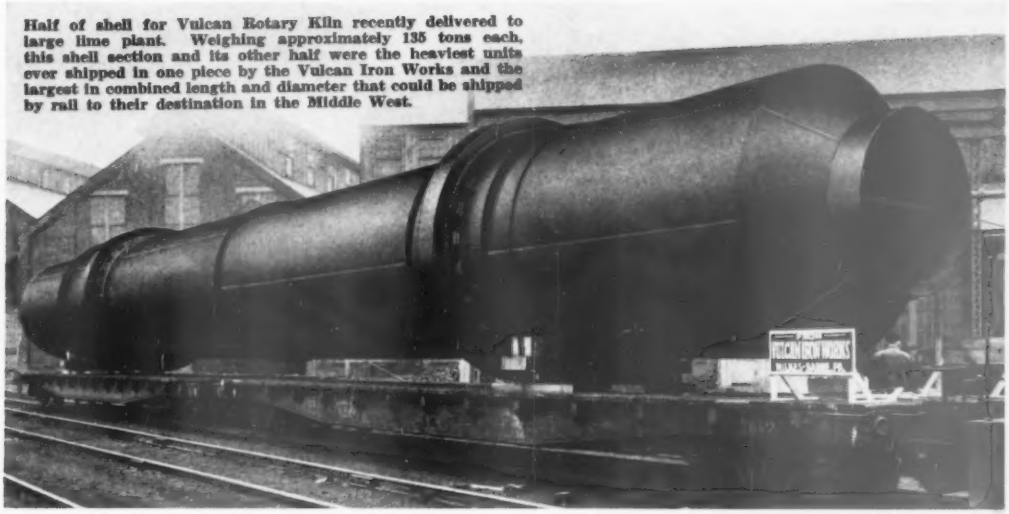
FOR EVERY PURPOSE

• TOUGH • CORROSION-RESISTANT
• ABRASION-RESISTANT • SMOOTH
STREAMLINED, HOMOGENEOUS STEEL CASTINGS

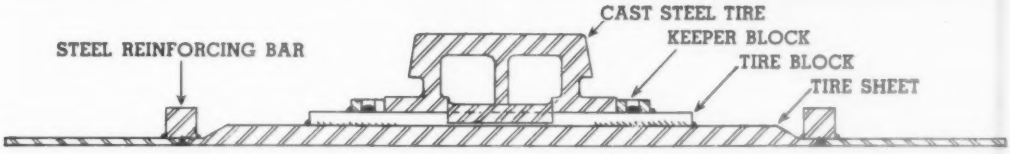
COST LESS!

We definitely guarantee deliveries on time.
We can handle emergency orders.

CALUMET STEEL CASTINGS CORP.
1636 SUMMER ST. • HAMMOND, IND.



Half of shell for Vulcan Rotary Kiln recently delivered to large lime plant. Weighing approximately 135 tons each, this shell section and its other half were the heaviest units ever shipped in one piece by the Vulcan Iron Works and the largest in combined length and diameter that could be shipped by rail to their destination in the Middle West.



THIS PATENTED RIVETLESS TIRE MOUNTING
Cuts Maintenance Costs on Vulcan Rotary Kilns

The longer a Vulcan Rotary Kiln is operated the greater the savings secured—because of its very low costs for maintenance and repairs. Fifty years of continuous experience in the design, manufacture and servicing of this type of equipment has taught our engineers where operating troubles are most apt to occur and how to prevent them.

A typical example of Vulcan Trouble-Preventing Kiln Construction is the patented rivetless tire mounting shown above. Not only does it completely eliminate the rivet-popping once considered inevitable but its distinctive combination of interlocking lugs and blocks absolutely prevents creeping of the tire in any direction.

Another important advantage is the use of ONE THICK PLATE beneath the tire, instead of several relatively thin plates, thereby improving heat-conductivity and overcoming the former tendency toward burning or bulging of the shell and reinforcing bands at these particular points.

Write us regarding any manufacturing or processing problems within the scope of the equipment listed below. No charge or obligation for estimates, constructive suggestions and preliminary designs.

VULCAN IRON WORKS

Established 1849

Main Office and Works **WILKES-BARRE, PA.,** New York Office 50 Church

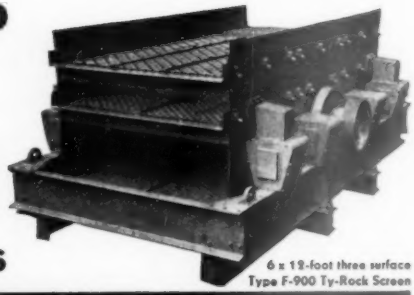
Rotary Kilns, Coolers and Dryers	Toothed, Double-Roll Crushers	Heavy-Duty Electric Hoists	Steam Locomotives
Rotary Retorts, Calciners, Etc.	High-Speed Hammer-Type Pulverizers	Self-Contained Electric Hoists	Diesel and Gasoline Locomotives
Improved Vertical Lime Kilns	Ball, Rod and Tube Mills	Scraper-Loading Hoists	Diesel-Electric Locomotives
Automatic Quick-Lime Hydrators	Shaking-Chute and Chain Conveyors	Cast-Steel Sheaves and Gears	Electric Locomotives and Larrys

RUGGED BALANCED

TY-ROCK SCREEN

for

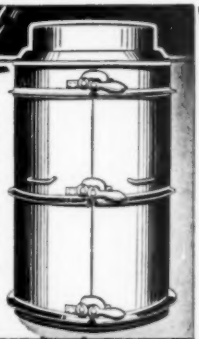
HEAVY LOADS—COARSE MATERIALS



6 x 12-foot three surface
Type F-900 Ty-Rock Screen

THE W. S. TYLER COMPANY, CLEVELAND 14, OHIO

THE "Quinn Standard" FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest, concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers QUINN CONCRETE PIPE MACHINES

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HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD COMPANY
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CONCRETE BURIAL VAULTS

AMERICA'S FINEST BUILT AND LOWEST PRICED

BERG VAULT SYSTEM

BERG VAULT CO.

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REPAIR PLATES

for mending and patching heavy conveyor belts

Multiply the serviceable life of your heavy conveyor belts by patching worn spots and closing tears with PLATE-GRIP Repair Plates. Easily applied, anywhere, they make strong, flush, dust-tight joints, that ride smoothly over all pulleys, outlast the belt.

Write for Catalog

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5386 Northwest Highway, Chicago 30, Ill.

PERFORATED METAL
SAND AND GRAVEL SCREENS

Manufactured exactly to your specifications

Any size or style screen, in thickness of steel wanted with any size perforation desired.

We can promptly duplicate your present screens at lowest prices

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PRODUCERS
WHO
REGULARLY
READ
ROCK
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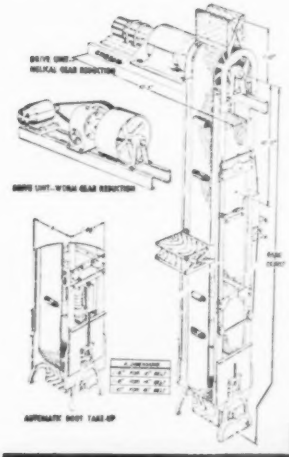
EHRSAM EMPLOYEES ELEVATOR makes you MONEY



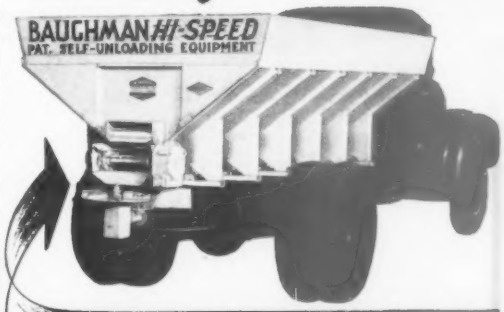
Steps saved . . . money saved. And when you count the steps saved, through use of an Ehrsam elevator, it means a neat profit for you.

Ehrsam Employees Service Elevator is made for 3 widths of belt, 12", 14" and 16" with three types of drive units of either 3, 5 or 7½ horsepower. Special applications for bags and boxes. Installation costs are reasonable. Write today for complete information.

THE J. B. EHRSAM & SONS
MANUFACTURING COMPANY
ENTERPRISE, KANSAS

new...

BAUGHMAN announces the latest design in *Customized Spreaders



the BOTTOM DUMP

Again BAUGHMAN leads! The versatile BAUGHMAN Self-Unloading body now is available with the bottom dump. Dumps road rock and other aggregates instantly through 4" opening along entire length of body bottom. Meets all highway requirements. Positive eccentric lever lock . . . will not leak when closed.

*CUSTOMIZED — built for specialized money-making jobs. Spreads lime and phosphate . . . delivers coal and grain into bins . . . transfers loads. RUGGEDLY BUILT of high tensile alloy steel for more strength with less weight . . . more rust resistance. Service-built for commercial operator profits.

PHOSPHATE SPREADER ATTACHMENT covers 3 acres a mile at speeds up to 15 miles per hour. Regulated volume—100 to 5000 lbs. per acre. 10½ ft. wide . . . folds for highway travel. Easy to attach or remove.

SWIVEL CONVEYOR ATTACHMENT delivers anywhere in a half-circle. Eliminates truck maneuvering . . . ideal for close quarters. One-man operation—controls at rear of body.

MARL SPREADER also spreads mud, paper mill sludge, sewage, etc. Special model with beater and 2 distributors turning in opposite directions—not designed for use with dry lime, phosphate, other dry materials.

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"There is a Baughman Distributor Near You"

ROCK PRODUCTS

August

"Annual Cement Issue"

was the largest and finest ever published

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for HI-SPEED OPERATION

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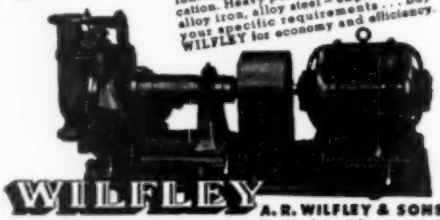
Slurries...handled at Lower Cost

Continuous operation without attention. Individual engineering on every application. Heavy pumping parts of rubber, alloy iron, alloy steel – engineered to your specific requirements . . . Buy WILFLEY for economy and efficiency.



WILFLEY centrifugal PUMPS

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Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures.

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JOY MANUFACTURING CO.
Contract Core Drill Division
MICHIGAN CITY, INDIANA

FREE SERVICE for BUYERS

Here is the quick way to get information and prices on machinery and equipment. Just check the item (or items) listed below about which you desire information. Then send this page to us, and we will take care of the rest.

TEAR OFF HERE

- Admixtures, Aggregate
- Aftercoolers, Air
- Aggregates (special)
- Air Compressors
- Air Separators
- Asphalt Mixing Plants
- Bagging Machines
- Bags
- Barges
- Batchers
- Belting, Conveyor, Elevator, Power Transmission
- Belting, V-Type
- Belt Repair Equipment
- Bin Level Indicators
- Bins and Batching Equipment
- Blasting Supplies
- Block Machines
- Concrete Building
- Bodies, Trailer
- Brick Machines and Molds
- Buckets
- Bulldozers
- Cars, Industrial
- Classifiers
- Clutches
- Coal Pulverizing Equipment
- Concentrating Tables
- Concrete Mixers
- Concrete Mixing Plants
- Concrete Specialty Molds
- Concrete Waterproofing and Dampproofing
- Conveyors
- Coolers
- Cranes
- Crushers
- Derricks
- Dewatering Equipment, Sand
- Diesel Engines
- Dragline Cableway Excavators
- Draglines
- Dredge Pumps
- Drilling Accessories
- Drills
- Dryers
- Dust Collecting Equipment & Supplies
- Electric Motors
- Engineering Service, Consulting and Designing
- Explosives & Dynamite
- Fans and Blowers
- Flotation Equipment
- Gasoline Engines
- Gear Reducers
- Generator Sets
- Grinding Media
- Gypsum Plant Machinery
- Hard Surfacing Materials
- Hoists
- Hoppers
- Kilns: Rotary, Shaft, Vertical
- Locomotive
- Lubricants
- Mills
- Pulverizers
- Pumps
- Scales
- Screen Cloth
- Screens
- Scrubbers: Crushed Stone, Gravel
- Shovels, Power
- Speed Reducers
- Tanks, Storage
- Tractors
- Trucks, Industrial
- Trucks, Mixer Body
- Trucks, Motor
- Vibrators
- Welding & Cutting Equipment
- Winches
- Wire Rope

If equipment you are in market for is not listed above, write it in the space below.

_____

_____

_____

Send to:

Research Service Department

ROCK PRODUCTS

309 W. Jackson Blvd. • Chicago 6, Illinois

Your Name..... Title.....

Firm Name .....

Street .....

City ..... State.....

PLEASE PRINT YOUR NAME AND ADDRESS RP-9

"Why doesn't our company do like other companies?"

If you haven't yet installed a Payroll Savings Plan in your company, you can be pretty sure some of your employees are asking that question. For workers *like* this easy, automatic way of investing in U. S. Savings Bonds—and more than 20,000 large companies have made this convenience available to the people on their payrolls.

WHAT GOOD IS "PAYROLL SAVINGS"?

The Payroll Savings Plan is the *only* means by which people can obtain Bonds automatically on the installment plan. It pays off in many ways: increased security for the individual, who gets back $4 for every $3 when the Bonds mature; company benefits due to improved worker morale—a reduction of absenteeism, labor turnover, and accidents; increased national security, because Bond sales spread the national debt.

HOW MANY CAN AFFORD BONDS?

Deductions for taxes and other purposes which reduce take-home pay should not be confused with allotments for Bonds, which are taken home as *interest-paying savings*. Of course, the cost of living makes it tough for some people to buy Bonds. But nation-wide experience indicates that 40-60% of the employees in any company can be persuaded to sign up for Payroll Savings—without high-pressure selling.

7,500,000 workers are regularly buying an individual average of $20 of Savings Bonds per month. Show your employees that you want them to have the convenience of Payroll Savings. You'll find it easy to set up the Plan in your company. All the materials and assistance you need are available from your State Director, U. S. Treasury Dept., Savings Bonds Division. (See your phone book.) Why not talk it over with him now?

The Treasury Department acknowledges with appreciation the publication of this message by

ROCK PRODUCTS

CLASSIFIED ADVERTISEMENTS

FOR SALE

For Sale

120 feet—24" Conveyor Equipment

120 feet—30" Lattice type conveyor equipment

1—9x16 Day Jaw Crusher

1—10x20 Day Jaw Crusher

1—10x36 Austin Western Jaw Crusher, like new

1—20x36 Universal Jaw Crusher, late model

1—210 Schramm Air Compressor on four pneumatic tires, four months old.

BROOKS EQUIPMENT AND MFG. COMPANY
2018 Davenport Road, S.E. Knoxville, Tennessee

READY MIXED CONCRETE PLANT

1—Complete READY MIXED CONCRETE PLANT—Blaw Knox Including the following: 800 barrel bulk cement bin, 100 ton per hour bucket elevator with unloading screw for handling bulk cement; Model 84-S Ransome Mixer (less than 2 years old); 100 ton three compartment aggregate bin complete with cement and aggregate weighing batchers; electric powered gantry and whirley for charging bins, with 2 cu. yd. Clamshell Bucket. Plant in daily operation and can be inspected in the Philadelphia district. Available on or before September 1, 1949. Offered subject to prior sale or commitment.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

Equipment Bargains For Quick Sale

1—1948 UNIT 1020, ¾ yard combination Shovel and Backhoe (new machine guarantee)
1—1947 BYERS 71 ⅝ cu. yd. Shovel and Hoe and Hoe
1—1948 INSLEY K12 ½ cu. yd. Shovel
1—1949 LORAIN TL-20 Hoe
1—MARION 93 M Shovel New Aug. 1947
1—CEMCO 24"x40' Portable Conveyor, new
1—BUCKEYE ⅝ yd. Mod. 70, new 1947, comb. Shovel, Hoe and Clam Boom.
1—LORAIN 57, 1¼ yd. Clamshell Mach., equipped 40' clam boom.
1—WILLIAMS 1 yd. MF Multiple Rope Clamshell Bucket
1—Owen Type K 1¼ yd. clamshell bucket (slightly used)
2—¾ yd. PETTIBONE-MULLIKEN Shovel Dippers with padlock, new
5—⅝ yd. QUICKWAY Dragline Buckets, new
1—SULLIVAN 105 Air Compressor, new
1—SULLIVAN 105 Air Compressor mounted on 1935 Ford Truck
1—CMC Radial Saw, new
1—CMC Roll-O-Hoist

WRITE, WIRE OR PHONE:
T. E. Potts Equipment Co., Inc.
2260 Sheridan Drive Delaware 2200
Buffalo 17, New York

FOR SALE

One Sullivan Compressor, Model WK-60, 315 CFM
One Mundy Model VK 198 Hoist
One Diamond Crusher 9x36 jaw
One Cedar Rapids 40x24 Roll Crusher
One Gilson Model 12 Pulverizer.
One Osgood 1½ yard shovel
Three F.W.D. trucks, 1946 Model SU with 8-yard rock boxes.
One International UD18 Power Unit, complete with clutch.
One Caterpillar RD-7 Tractor with bulldozer

NORTHWESTERN ENGINEERING CO.
Rapid City, South Dakota

Bargains!

225 HP Busch Sulzer diesel generating set. 150 KW AC. Complete. Modern.

30 ton Whitcomb diesel mechanical locomotive. New in 1943.

35 ton Ohio locomotive cranes. Built 1943. Reconditioned.

MISSISSIPPI VALLEY EQUIPMENT CO.
513 Locust St. St. Louis 1, Mo.

A Rare Bargain

Complete Lime and Rock Plant. Modern Equipment, approximately 50 tons per hour capacity. Write for complete description and price. Also 2 TD International and one Caterpillar 35 tractors, good condition, cheap.

INDEPENDENT STAVE CO. P. O. Box 104, Lebanon, Mo.

FOR SALE

Complete, Kent Block tamping machine, continuous mixer with 15 ft. conveyor. Excellent condition, also 4 in. mould for machine $1500.00

Also

1 Kent Tamper, Stripper and motors $850.00

1 Burton Electric loader $150.00
Above equipment in service

KENTUCKY FERTILIZER WORKS
Winchester, Ky.

Jaw Crushers—4"x8" up to 36"x42".
Crushing Rolls—12"x12" up to 54"x24".
Gyratory Crushers—No. 3, up to No. 12.
Ring Roll Mills— No. 0, No. 1, and No. 2
Swing Hammer Mills.
Rot. Fine Crushers—Nos. 0, 1, 1½ and 2.
Direct Heat Rot. Dryers—3½'x25', 4'x30', 5½'x40', 7'x50',—6x60—6½x60.
Semi-indirect heat Dryers—70"x35', 80" x45'.
Cement Kilns—3' up to 7' diameter.
Hardinge, Marcy & Fuller-Lehigh Mills.
Raymond Mills—Nos. 00, 0, 1, 4 roll.
Tube—Rod and Ball Mills—3' to 7' diameter.
Vibrating Screens—Air Separators.
1—7' Newhouse Crusher, Latest Type.
1—9'x170' Kiln.

W. P. HEINEKEN
227 Fulton St. New York, N. Y.
Tel. Barclay 7-7298

FOR SALE

20-A Telsmith Primary Crusher with motor and drive.

Box H-77, Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

FOR SALE

Ingersoll-Rand 315 Air Compressor mounted on Ford Truck.
Ingersoll-Rand F.M.2 Wagon Drill on pneumatic tires.

FRED R. McKENZIE & CO.
Fulton, Illinois

FOR SALE

One 24x54 Pioneer Roll Crusher used very little. Price reasonable.

LATROBE CONSTRUCTION CO.
P.O. Box 150 Latrobe, Pa.

FOR SALE

One Besser Yard Hoist (stripper)

DESTIN BLOCK CO.
P.O. Box 64
Miami Springs, Florida

GOLD!??

If you think you have gold on your property and do not know how to get it out or how to make it pay, let us help you. We have a Gold Separator that will solve your problem. Write us to-day. No obligation. No Gold no pay.

DETROIT WINCH COMPANY
11000 E. McNichols Detroit 5, Mich.

ALSO SEE READY-MIXED CONCRETE AND CONCRETE PRODUCTS EQUIPMENT CLASSIFIED ADVERTISING IN CONCRETE PRODUCTS SECTION

FOR SALE

1—American pulverizer with 125 HP motor

1—70 HP Marine type diesel engine

All steel dredge boats, tug boats and pug boat

Electric motors AC from 1 HP to 300 HP

Link Belt pan conveyors 36'x22' centers

Richardson automatic scales

4" and 5" cement circulation pipe

Steel bins, hoppers and tanks

Fuller-Kinyon pump (6")

6'x50' Manitowac dryer

1—10'x150' Kiln

4 Wood hoppers lined with steel

Elevators with casing and double chain

B & W coal pulverizer

Steel buildings: 20'x100', 75'x350' and 50'x350'

Fuller clinker cooling equipment for 10' kiln

Schmidth tube mill 6'6"x20'

1—Single drum deck hoist

1—Bell & Howell 16 mm. Movie projector

OLLIE E. LAWRENCE
P.O. BOX 688
QUINCY, MICHIGAN

FOR SALE

1—"Caterpillar" D2 and Traxcavator. Good condition $3,500.00

1—"Caterpillar" Diesel D4 tractor with Athey Overhead Loader, new 1949, demonstrator. Bargain 8,500.00

1—"Caterpillar" RD6 tractor w/La-Plant-Choate V-61 snow plow 3,000.00

1—"Caterpillar" RD4 tractor with La-Plant-Choate Bulldozer. Nice condition $3,800.00

1—"Caterpillar" Diesel No. 10 tandem motor grader, nice condition, good tires 2,700.00

1—D13000 Engine Replacement for D8 tractor. Rebuilt 1,950.00

1—Allis-Chalmers HD7 tractor, wide gauge, with Garwood angledozer. New in 1948 ..... 7,000.00

1—Bucyrus-Erie ⅜ cu. yd. shovel 10B. New 1948, perfect 8,500.00

1—P&H 105, ½ cu. yd. shovel with backhoe attachment. Good condition $5,800.00

T. SOUTHWORTH TRACTOR & MACHINERY CO., INC.
Glenwood Road-Menands
Albany 4, N. Y.
Phone Albany 5-5255

SCALES—CRUSHERS
VIBRATING SCREENS
CONVEYORS—FEEDERS
CONVEYOR IDLERS

Immediate Shipment

TRUCK SCALES

15 Ton Truck Scales..... $450.00
20 Ton Truck Scales..... 510.00
26 Ton Truck Scales..... 565.00

Other scales to 50 ton capacity. All truck scales complete with structural steel weighbridge. Replacement parts for most all makes of scales.

STONE, COAL, CINDER CRUSHERS

10 to 20 tons per hour capacity $395.00
25 to 50 tons per hour capacity 945.00

FEEDERS

15 to 35 ton capacity (per hr. of 50 lb./cu. ft. mat.) $150.00
28 to 60 ton capacity (per hr. of 50 lb./cu. ft. mat.) 190.00
50 to 100 ton capacity (per hr. of 50 lb./cu. ft. mat.) 575.00
100 to 175 ton capacity (per hr. of 50 lb./cu. ft. mat.) 800.00

VIBRATING SCREENS

Approximately 100 machines in stock, ranging in screen sizes from 2'x5' to 5'x14' and with 1 to 5 decks. Eccentric weight or positive throw eccentric shaft types.
Prices from $395.00

CONVEYORS — PICKING TABLES

Troughing—idler conveyors—picking tables—Lengths from 10' to 500', widths to 60".
Prices from $395.00

TROUGHING AND PICKING TABLE IDLERS

All steel. Interchangeable with other well-known makes of idlers. Precision ball bearings with alemite fittings. Replaceable bearings. Shafts run clear through, and no bearing adjustments are required. Easy to start and will run in cold weather. No grease seals. Rust-proof ball races; maintenance is negligible. Build your own conveyors; we have all parts, including standard sections, head and tail pulleys, take-ups, drives, idlers, speed reducers, sheaves, belting, etc.

3-roll Idlers:

Width			
14" belt	$18.50	24" belt	$21.00
16" belt	19.00	30" belt	22.00
18" belt	20.00	36" belt	23.00
		42" belt	24.00

1-roll Idlers:

Width			
24" belt	$ 8.25	36" belt	$ 9.75
30" belt	9.00	42" belt	10.50
		48" belt	11.25

More than 2000 mines and quarries have Bonded equipment. Send for catalog and prices.

BONDED SCALE & MACHINE CO.
128 Bellview Ave. Columbus 7, Ohio
Ph. Garfield 2186; Univ. 2832, Eves.

CONSULT US BEFORE BUYING OR SELLING USED FARREL-BACON CRUSHERS SIZES 60"x48" to 10"x7"

As manufacturers of these machines we are in a position to assure you as to condition and operating ability. Send for catalog.

149 Broadway **BACON-PIETSCH CO., INC.** **New York 6, N. Y.**

FOR SALE

1—630 White Truck, dump.
2—6"x21" Jaw Crushers (overhead roller brg.)
1—6"x20" Jaw Crusher (Cam 4 lever Bronze brg.)
1—10"x20" Jaw Crusher (Cam 4 lever bronze brg.)
Steel Frame for parts, double eccentric
All crushers are made by Acme Road Machinery Co.
1—Model 62 Byers ½ yd. shovel in good condition Or would like to exchange on
1—No. 4 Northwest Shovel
1—Set Rolls, 36" diam. two belt type
1—Bulldozer, Cat. D-4

Wanted

1—Eccentric Shaft for 10"x42" Acme Jaw Crusher. (Roller brg.)

ST. JOHNSVILLE SUPPLY CO., INC.
St. Johnsville, N. Y.

GRADERS

3—ROME GRADERS, Model 404, Tandem Drive, New in February 1947. Hydraulic Control, powered with a 104 Brake H.P. 6 Cylinder Diesel Engine Power 4 Wheel Brakes, Scarifier included. Serial Nos. 404-791, 404-788, 404-790.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

FOR SALE
STATIONARY DERRICK HOIST

100 Ton (Long Ton) Shear Leg; 104' from top to sheave; Boom 130' 5⅝".

Photo, complete information

SOUTHERN SALES COMPANY
P.O. Box 1427 **Miami, Florida**

NORTHWEST CRANE

Model No. 4, 50' boom. Very good working condition and appearance. Presently working on large project in New York City. Price—$4,500.00

EDWARD EHRBAR, INC.
29 Meserole Ave. Brooklyn, N. Y.
Evergreen 3-5000

FOR SALE

10 Ton Outside Crane and Runway 80 ft. Span—410'-long, A.C. Current
10 Ton P&H Crane 31'-Span A.C. Current 30' Lift
MANY OTHER CRANES—INQUIRIES INVITED

BENKART STEEL & SUPPLY CO.
2017 Preble Ave. Pittsburgh 12, Pa.

FOR SALE

1948—312—Adams Grader 600 hrs. $8,000.00
1941—212—Caterpillar Grader $3,000.00

FORESTVILLE SAND & GRAVEL CO.
8100 Marlboro Pike
Washington 19, D. C.

FOR SALE

1—Model C LeTourneau Tournadozer—Serial No. LD2331-C2-C, 290 hrs. Same as new condition. $13,500.00.

A. M. GHOLSON
Tampico, Illinois **Phone No. 124**

FOR SALE
CONVEYOR BELT

500 ft. roll of New Goodyear belt, 36", 6 ply, 32 oz. duck, 3/16" top cover, 1/32" pulley cover, bargain for quick sale.

E. D. HEEHS & SON
1283 Hollywood **Memphis, Tenn.**

FOR SALE—SAND DRAG COMPLETE

2-Drum winch (each drum has independent clutch and brake either drum can be operated independently or both simultaneously).

300 feet ⅝" cable, 1,000 feet ½" cable, 4-single 8" all metal shive blocks and 1-double 8" block.

1—Rotary screen (⅝" mesh steel), 30"x6' powered by ½ H.P. motor (single phase 110 or 220 V).

1/3 cu. yd. self-dumping drag bucket (can load a truck from stock pile or creek).

Powered by 6 cyl. Buick motor (29), thoroughly overhauled. Plenty of power.

The above equipment is complete and in good condition. We have sold our brick equipment, hence sale of sand equipment. Price $1,000 cash F.O.B. our location.

SELF BRICK CO.
P.O. Box 783, Martinsville, Va.

for IMMEDIATE DELIVERY *of* RUBBER PRODUCTS

CONVEYOR BELTING. TRANSMISSION BELTING. ELEVATOR BELTING. FIRE. WATER. AIR. STEAM. SUCTION and WELDING HOSE.

CALL *WIRE* *WRITE* **CARLYLE**

THE RUBBER HEADQUARTERS

CARLYLE RUBBER PRODUCTS ARE NEW, GUARANTEED & LOW PRICED

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom Covers
48"	8	1/8" — 1/16"
42"	5	1/8" — 1/16"
36"	6	1/8" — 1/16"
30"	6	1/8" — 1/16"
30"	5	1/8" — 1/16"
26"	5	1/8" — 1/32"
24"	5	1/8" — 1/32"
24"	4	1/8" — 1/32"
20"	5	1/8" — 1/32"
20"	4	1/8" — 1/32"
18"	4	1/8" — 1/32"
16"	4	1/8" — 1/32"
14"	4	1/16" — 1/32"
12"	4	1/16" — 1/32"

Inquire For Prices — Mention Size and Lengths

NEW GUARANTEED

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

	Width	Ply	Width	Ply	Width	Ply
Inquire For Prices — Mention Size and Lengths.	18"	6	10"	6	6"	5
	16"	6	10"	5	5"	5
	14"	6	8"	6	4"	5
	12"	6	8"	5	4"	4
	12"	5	6"	6	3"	4

ENDLESS "V" BELTS

"A" Width All Sizes —
"B" Width All Sizes —
"C" Width All Sizes —
"D" Width All Sizes —
"E" Width All Sizes —

Sold in Matched Sets. Inquire For Prices — Mention Size and Lengths.

SPECIAL OFFER . . . HEAVY DUTY RUBBER HOSE

FIRE HOSE

APPROVED SPECIFICATION HOSE EACH LENGTH WITH COUPLINGS ATTACHED

I.D. Size	Length	Per Length
2½"	50 feet	$28.00
	25 "	16.00
2"	50 "	23.00
	25 "	13.00
1½"	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

AIR HOSE

I.D. Size	Length	per Length	Universal Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 Pair
¾"	25 "	7.50	1.50 Pair
	50 "	15.00	1.50 Pair
1"	25 "	10.00	1.50 Pair
	50 "	20.00	1.50 Pair

LARGER SIZES ALSO AVAILABLE

All Prices—Net — F.O.B. New York

WATER HOSE

I.D. Size	Length	per Length
¾"	25 feet	$4.25
	50 "	8.00
1"	25 "	6.25
	50 "	12.50
1¼"	25 "	7.50
	35 "	10.50
	40 "	12.00
	50 "	15.00
1½"	25 "	10.00
	35 "	14.00
	50 "	20.00

Each Length with Couplings Attached

CARLYLE RUBBER CO., Inc.

62-66 PARK PLACE, NEW YORK 7, N. Y. Phone: BArclay 7-9793

FOR SALE

ITEM 1

One Caterpillar Power Unit, Serial No. 9 J 184-B. Model D-11000, 6 cyl., 5½-in. bore, 8-in. stroke. This drives the generator with V-belts. Electric Machinery Co. Generator, Serial No. 400066, KVA 140, Kw 112, power factor 80 per cent, Volt 480, Amperes 169, RPM 1200, phase 3, cycle 60. General Electric Exciter, KW 2½, Cycle D.C., Volt 220, Type C. D. 35, RPM 1350, Amperes 10.2 Serial No. 1669034, complete with switchboard and regulators.

ITEM 2

One Buda Diesel Engine, Model 6-D-C 1879-D-3070 2/M, bore and stroke 6⅝x8⅝, governor 900 RPM, Serial No. 20981, direct connected to Crocker Wheeler alternating current Generator, K.V.A. 125, KW. 100 power factor 80, Cont. duty 50 degrees centigrade temp. rise, RPM 900, volts 480, phase 3, cycle 60, amperes 150. Exciter volts 125, amperes 24, complete with Esco Generator switchboard controls, serial No. 3180, Type S.W.B. Date 9-44, K. W. 100, volts 480, phase 3, cycle 60. Mfg. Electric Service Engineering Co., Crocker-Wheeler Exciter Serial No. 80690, 125 volts, 24 amp., 1060 RPM.

North West ¾ yd. Crane in good working condition.

This equipment can be seen at the plant of the Palmer Crushing Co., Slinger, Wis. This is used equipment.

PALMER CRUSHING CO.
SLINGER, WISCONSIN
TEL. 124, SLINGER, WIS.

FOR SALE

One Heavy duty Mack truck—tandem drive 12 cy. hyd. dump box with automatic end gate—Model LPSW—gas power, condition 80% new $6,500.00

Three Heavy duty Hug trucks—tandem drive—12 cy. Boulder Dam type dump boxes—Cummins HB 600 Diesel powered—condition good—two have rebuilt engines, combined price $7,500.00

Note—Will consider in trade two (2) 200 KW Diesel Power Plants.

One 118 Northwest Crane on Cats—gas power—45 ft. boom—handles ¾ cy. clamshell $2,000.00

One Combination scrubber and scalping screen (60"x15'6") with frame and countershaft for drive—condition very good $500.00

One Tar Kettle—condition good.. $200.00

Gas Power Driver wheel roller, single, five ton equivalent, for use in bituminous paving where space does not permit use of two wheel roller, condition—good $500.00

EAU CLAIRE SAND & GRAVEL CO.
1 Market Square Bldg.
Eau Claire, Wis.

TOURNAPULLS

4—LeTOURNEAU TOURNAPULLS, Model Super C's Powered with Cummins Diesel Engines. Excellent condition.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

RAILS—NEW AND RELAYING
CARS—NEW AND USED—ALL TYPES

MOST ALL SECTIONS IN STOCK also spikes, bolts, frogs, and switches available. All gauges.

M. K. FRANK
480 Lexington Ave., New York City
Park Building, Pittsburgh, Penna.
Stack Bldg., Reno, Nevada

EARTH DRILL

1—New BUDA Earth Drill, Model HBJ, Powered with Gasoline Engine, including electric starter. Automotive type transmission provides 4 speeds forward, one in reverse. Hydraulically controlled. Tower lowers to horizontal traveling position.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

FOR SALE

1—22B Bucyrus-Erie Shovel
1—15B Bucyrus-Erie Shovel
1—Buckeye 70 Clipper Shovel
1—Parmenco Drill
1—Quincy 85 ft. compressor, mounted on model B Allis-Chalmers tractor
1—CH&E 2½" pump
1—Ingersoll-Rand 55 lb. jackhammer

All in Nearly New Condition
NO WAR SURPLUS

H. E. McCLAIN
Wellsville, Mo.

FOR SALE

1—Speeder ½ yd. shovel (crawler) motor recently overhauled $1500.00

C. E. RUBERTS & SON
363 E. Elm St. Coalinga, Calif.

FOR SALE

Dixie Hammermill—14' Bucket Elevator—and Model L Allis-Chalmers Engine—On Steel Truck.
BARGAIN PRICE—$2250.00

MARTIN TRACTOR COMPANY, INC.
P.O. Box 237 Topeka, Kansas

ALSO SEE READY-MIXED CONCRETE AND CONCRETE PRODUCTS EQUIPMENT CLASSIFIED ADVERTISING IN CONCRETE PRODUCTS SECTION

RAILS
NEW AND RELAYING
Track Accessories
- Prompt Shipments
- Fabricating Facilities
- Trackage Specialists

from 5 warehouses

L. B. FOSTER CO.
NEW YORK — PITTSBURGH
CHICAGO — HOUSTON
Address the Foster Office Nearest You

PUMPCRETES

1—REX PUMPCRETE, Model 160 Double, Completely Overhauled. Gasoline Engine Driven, Latest Model Machine with Selective Drive Transmission, with approximately 1,000 lin. ft. 7" Pipe.

1—REX PUMPCRETE, Model 160 Single, Gasoline Engine Driven, Very Latest Model, Completely Overhauled with approximately 700 lin. ft. 6" Pipe.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

FOR SALE

1—No. 106 Dry Kominuter
1—Lot of spare Kominuter parts
2—3-bearing slip-ring motors, 300 H. P., 440-V., 60 cycle, 585 R.P.M.
2—Silent chain drives for Kominuter
2—4'x8' single-deck Hummer screens with V-32 vibrators and spare parts
1—5 H.P. motor generator set

All equipment in good condition.

Ash Grove Lime & Portland Cement Company
101 W. Eleventh Kansas City 6, Mo.

FOR SALE

1—78x18 HRT Boiler ASME 200-lb. pressure.

2—125 HP Murphy Diesel engines direct connected to 85 KW 3 ph., 60 cy., 240 volt generators.

2—200 HP Economic fire box boilers 125-lb. allowable pressure. Built 1933. With Stokers.

BREW, WOLTMAN & CO., INC.
50 Church St. New York 7, N. Y.

FOR SALE

2—New No. 78 Wemco SH Spiral Classifiers, 78" spiral diameter, 32 ft. tank length, as described in Western Machinery Company's bulletin number C-1-S-1. Self Supporting tank, single pitch. Motorized hydraulic lifting device. 10 H.P. BBTEFC, 3 phase, 60 cycle, 220/440 V motor. V belts and cone type gear reducer. Spiral operates at 7 rpm. Suitable for classifier or sand and gravel washer. Write

CALCO CHEMICAL DIVISION, AMERICAN CYANAMID CO.
Piney River, Virginia

CRANES—DRAGLINES—SHOVELS

9—Elec. Shovels—1, 2, 4, 8, 10 and 17 yd. Cap.
2—Diesel Walker Draglines, 6 and 7 yd.
3—40 Ton American 120 Ft. Boom Whirley Cranes.
6—20, 25, and 35 Ton Loco. Cranes.
3—Diesel Shovels—2, 4 and 5 yd. Cap.

DUMP & R.R. CARS

75—50 Ton Flats, 90—50 Ton Gondolas.
120—8000 and 10,000 Gal. Cap. Tank Cars.
46—Kopple 1½ yd., 24 and 30 In. Ga. V. Shape.
77—2 yd., 3 yd., 4 yd. and 6 yd. 36 In. Ga.
50—30 yd. and 36 yd. Air Dump Std. Ga.

AIR COMPRESSORS

RELTED: 355, 528, 676, 1000, 1300 and 1570 Ft.
ELECTRIC: 676, 807, 1202, 1722, 2200, 3000, 3700 and 5000 Ft. Cap.
DIESEL: 603, 807, and 1000 Ft.

BALL, ROD AND TUBE MILLS

5'x22" , 6'x48" and 7'x108" Hardinge Conical Ball Mills.
3x3, 4x10, 6x6 and 7x9 Ball Mills
4x16 and 5½x20 Smidth Tube Mills
5x22 Allis Chalmers Tube Mills
2x6, 3x8, 4x10 and 7x9 Rod Mills

PULVERIZERS

6'x48" Hardinge Air Swept Ball Mill
No. 0 Raymond auto Pulverizer
No. 1½ Sturtevant Ring Roll
4 and 5 Roll Low Side Raymond

STEEL STORAGE TANKS

10,000 Gal., 15,000 Gal., and 20,000 Gal. Cap.
2—74,000 Bbl. and 3—10,000 Bbl. Cap.

SEPARATORS and CLASSIFIERS

6'x14' Hardinge counter—current classifier
3—8 ft., 10 ft. and 14 ft. Gaycos

JAW CRUSHERS

6x20, 7x12, 8x10, 8x12, 9x16, 9x36, 10x16, 10x20, 10x30, 10x36, 10x40, 11x18, 12x18, 12x24, 12x26, 13x24, 13x30, 14x26, 15x24, 15x36, 18x30, 18x36, 24x36, 42x48, 30x42, 36x42, 40x48, 42x66, 60x84.

REDUCTION TYPE CONE CRUSHERS

322R Allis-Chalmers
24"x36" Telsmith Gyrosphere
5½ Ft. Symons Short Head
1'-8" and 2'-4" Traylor TY
5", 7" and 10" Newhouse
19-S, 37-S and 49 Kennedy

PRIMARY TYPE—GYRATORY CRUSHERS

10B and 13B Telsmith
14", 16", 20" and 30" Traylor Bulldogs
16", 20" and 30" McCully
Type K, Austin, etc. No. 4, 5, 7½, 9 and 12

ROTARY DRYERS and KILNS

6x30xA and 6x35xB Ruggles Coles
90"x41' and 6x55 Christie
Single Shell: 3x20, 4x20, 5x36, 5x50, 6x36, 6x60, 7x30 and 8x55
Kilns: 5x50, 6x60 and 7½x125

STEEL DERRICKS

GUY: 2 Ton 85 ft. Boom, 15 Ton 100 ft. Boom, 20 Ton 115 ft. Boom, 50 Ton 100 ft. Boom
STIFF LEG: 5 Ton 70 ft. Boom, 15 Ton 100 ft. Boom, 25 Ton 100 ft. Boom, 75 Ton 135 ft. Boom

LOCOMOTIVES

GASOLINE: 3, 5, 8, 12, 14 and 30 Ton
STEAM: 8, 20, 40, 60 and 80 Ton
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 40 Ton
DIESEL: 15 Ton, 30 Ton, 65 Ton and 80 Ton

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.

LOCOMOTIVES — CRANES QUARRY TRUCKS

1—45 ton G.E. Diesel Electric standard gauge locomotive, excellent condition.

1—8 ton Plymouth gasoline locomotive, built 1940 excellent condition and appearance, 36" gauge, Westinghouse air brakes.

4—Euclid trucks, 15 ton rear dump with 12 yd. bodies. Cummins diesels.

BIRMINGHAM RAIL & LOCOMOTIVE COMPANY
BIRMINGHAM 1, ALA.

RELAYING RAIL

TRACK ACCESSORIES
MIDWEST STEEL CORPORATION
CHARLESTON 21, W. VA.
KNOXVILLE, TENN. - PORTSMOUTH, VA.

SHOVELS—CRANES—DRAGLINES

Buc-Erie 120B 5 yd. Elec. Shovel.
Lima 1201, 2½ yd. Diesel Shovel.
Northwest 80D, 2½ yd. Diesel Shovel.
Northwest No. 6, 1¼ yd. Diesel Shovel.
P&H 855B, 2 yd. Diesel Shovel.
Lorain 820, Diesel Crane, 90' boom.
Lorain 79, 1¾ yd. Diesel Shovel.
Buc-Erie 37H, 1½ yd. Diesel Crane, 100' Bm.
P&H 1225, 2¼ yd. Electric Shovel.
Buc-Erie 54B 2½ yd. Diesel Shovel.
Northwest Model 25, ¾ yd. Diesel Shovel.
Marion Model 151M 5 yd. Elec. Shovel.
Marion Model 350; 8 yd. Elec. Shovel.
Marion Model 37; 1¾ yd. Elec. Shovel
Marion Model 450; 1¼ yd. Elec. Shovel.
Marion Model 37, steam shovel, 1¾ yds.

CRUSHERS

JAW: Acme 10x20, 14x26, 14x28, 10x42, 16x32, 18x32.
Cedar Rapids 20x36, 25x40.
Farrell 16x20, 13x30, 14x36, 42x40.
Buchanan 36x42, Type C 40x48.
Pioneer 24x36 portable with feeder and conveyor.
Traylor 18x36, 24x36.
Austin Western 25x40.
Allis Chalmers 20x18.
Good Roads 10x30.
Telsmith 18x32.
Champion 1630, 1040 and No. 6.
GYRATORY: Allis Chalmers-McCully, 6", 7½", 8", 9", 12K, 20", 30".
14" Newhouse, 24" Gyrasphere, 9K, 6K, 5K, gates.
Telsmith 5H, 10-B, 13-B, 16-B.
Kennedy Van Saun 7, 19, 25½-S, 38.
Traylor Ty-1-8.
ROLL: Allis-Chalmers 54x24, Diamond 40x22, Pioneer 30x18, Telsmith 24x16, McLanahan & Stone 18x12, New Holland 24x16.
HAMMER MILL: Size 4 Williams Jumbo, Pennsylvania SX2, 22x22, Cedar Rapids 20x33, Jeffrey 36x42, Jeffrey 36x24, 36x40 Dixie.
BALL MILL: Allis Chalmers 4'x4', 5'8"x18', Kennedy Van Saun 7'x5'.
ROD MILL: March 2'x6', 3'x6', Allis Chalmers 4'x8', Hardinge No. R 206.
PULVERIZER: Williams 30 Slugger, Day Model 70.
TUBE MILL: Ken. Van S. 5'x8' air swept.

TRANSIT MIXERS

10 Jaeger 6 yd. agitators completely rebuilt.
4 Jaeger 6 yd. agitators on Int. K-11-F.
2 3 yd. Ransome high discharge truck mounted.
3 Rex 6 yd. agitators on Diamond "T" chassis.

AIR COMPRESSORS

I-R 1500 CFM, 100 psi, Electric Drive.
I-R 2200 CFM, 100 psi, Electric Drive.
C-P 1936 CFM, 100 psi, Electric Drive.
C-P 1300 CFM, 100 psi, Electric Drive.
Penna. 1300 CFM, Direct Connected; elec.

CABLEWAYS

Sauerman Slack line 1 yd. complete with Jaeger Diesel hoist. Practically new.
Sauerman 1½ yd. 70' mast 150 HP Elec. Hoist.
Sauerman 1 yd. with Waukesha gas hoist.

TRACTORS

2 Cat. D8 Series 2U-2700 angle dozer DDPCU.
Cat. D8 Series 8R, angle dozer and DDPCU.
Cat. D8 Series 8R, stg. bulldozer DDPCU.
Cat. D7 Series 3T Cable controlled dozer.
Cat. D7 Series 4T Cable controlled dozer.
Cat. D6, New 1941 with hydraulic dozer.
Int. TD-18 Trail Builder angle bulldozer.
Cat. D4 with T4 trax-cavator 1 yd. bucket.

READY-MIX CONCRETE PLANTS

Butler 300 ton 3 compartment 2 aggregate and one 400 barrel cement, complete with weighbatchers.
Blaw-Knox 105 ton aggregate bin, 3 compt. weighbatcher.
Butler 200 ton 2 compartment aggregate each compt. 400 bbl. cement complete with elevator, scales, etc.
Heltzel 100 ton 3 compartment aggregate bin.
Johnson 192 tons 3 compt. aggregate bin.
Heltzel 80 ton 3 compt. aggregate bin.

ASPHALT AND CRUSHING PLANTS

B-G Model 848 Bit. Concrete Mixing.
B-G Model 879A Finisher.
Pioneer 154W Crushing and Screening, complete.
Madsen Asphalt 3000 lb. cap. Complete.
Cedar Rapids Model B Asphalt Plant Complete.
Cedar Rapids "Streamline" Asphalt 1000 lbs.
Iowa Model 2A Crushing and Screening.
Universal 800 Crushing Plant, portable on pneu.
Cedar Rapids Pitmaster straight line screening and crushing.
Cedar Rapids Two unit mobile crushing.
Cedar Rapids Model AAA Crushing.

LOCOMOTIVES AND DUMP CARS

8 Koppel 5 yd. 36" Ga. Dump Cars.
10 Western 4 yd. 36" Ga. Dump Cars.
Plymouth 25 ton gas loco. std. gauge.
Whitcomb 12 ton 36" gauge, Diesel.
Plymouth 20 ton gas Loco. Std. ga.
Plymouth 12 ton gas Loco. 36" ga.
G.E. 45 ton Diesel-Elec., std. ga.
Vulcan 12 ton gas. std. ga.
2 Porter steam Loco. 12 tons, 36" Ga.
Vulcan 25 ton Steam Loco. Std. Ga.
Plymouth 30 ton std. ga. Gas. Loco.

DERRICKS

Lambert 25 ton Guy derrick 115' bm.
American Terry 20 ton Guy Derrick 100' bm.
American Terry 20 ton stiff leg with hoist.
American Terry 10 ton steel stiff leg derrick.
Lambert Steel Guy Derrick 20 ton cap.
Harris 50 ton Guy derrick 100 ft. mast, 90 ft. boom.

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Cortland 7-0723 Cable: RICHWALSH

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SCREEN 4x12 Triple Deck Mogul Diamond Vibrator
HOIST 50 HP Thomas Type K Single Drum

G. & W. H. CORSON, INC.
Plymouth Meeting, Pa.

FOR SALE

TANKS Vert. 2—25x25', 2—11'x30', 4—6'x20'; Horiz. 1—25'x38½'; 63/64" plate steel oval ends Clr. Boiler drums 2—3'x12'6", 2—5'6"x18'.

CONVEYORS Belt 24", 1—62', 1—45° and 1—20' Centers
Screw 9" 1—14'; 12", 1—64'; 16", 1—14', 1—32'

ELEVATORS, DBL. CH. 1—46' Center buckets 7"x13" spaced 24", 1—28' Center buckets 12"x 13" spaced 25".
1 Each 60' and 68' Centers buckets 5"x10" spaced 16" in 3"x2" steel castings.
1 Flight Conveyor 14"x14' 10'.
All with drive gears and motors, Idlers or supports.

CENTRIFUGAL PUMPS 1x1¼, 1¼x1¼, 1½x2, 2x2, 2x2½, 2½x2½ St. Jhtd, 3x2½x4 Steam drive gears and motor.

GAS EXHAUST FANS. Sturtevant 2 size 5 form M, 1 No. 2, with drive gears and motors.

GAS COMPRESSOR. Worthington, HB 26"x13" drive gears and 100 HP Motor.

FILTER. Niagara 85, 8 cu. ft., 9 filter leaves

VIBRATING SCREEN. Hummer 4'x10' 2 surface, thermionic power converter

ROTARY DRYER. Cummer & Co., 7' dia. 50' long. Controls, stokers, drive gears and motors.

TRANSFORMERS. 9—50 KVA, 2400, 240/120; Distribution and convertible, panels, cabinets, controllers and vibrators.

CHARCRUSHER. Komarek Greaves, 24"x12", Hammermill, 20 HP motor.

MOTORS 3/60/220/440 1 to 100 HP various types and makes

BLOWER. Roots Connerville, 8 D Cap 417 CSM speed 400 RPM pressure 5 size 10x10, V belt drive.

MACERATOR. Komarek Greaves 36"x36"x23" dbl shaft, steel shell C I ends, drive gears and motor.

BUBBLE FRACTIONATING TOWER 36"x45'

GAS SCRUBBER, GAS MACHINERY CO. 6' diam. 24' high wood grid trays.

COOLING TOWER. Lillie Hoffman 15'x15'x27' high with fan and motor.
Marley 32'x8'x10' high atmospheric type

LABORATORY EQUIPMENT. Watson 20T electric press, Thropp No. 1690 Mill 2 HP Gear motor, Brown No. 117 Potentiometer and No. 223921 pyrometer, Fisher 859 M Penetrometer Sola No. 13943 transformer Bacharach Cn-2 Analyzer, Tyler Screen scale 16-20-16-100 to inch, Taylor emagin thermometer 60-240° Mercury, beakers; tubes, balancers, Misc. Items.

R. R. RAILS. 50 tons, 80 and 85 lb.—splice, joint and switch plates

PRIMARY CRUSHER: Pioneer Portable, 36"x24" with 4 deck vibrating screen trailer mounted, caterpillar Diesel Engine, Model RD 8 Skid Mount completely overhauled, located at Pioneer Engineering Works, 1515 Central Ave., Mpls., Minn.

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CARS: 16—20 yd., all steel, air dump. 4—30 yd., all steel, air dump.

SHOVELS: Bucyrus Erie 54-B, 2½ yd., D17000 caterpillar motor. Bucyrus Erie electric, 120-B, 5 yd. capacity, with or without dragline attachments, 2200 volt, A.C.

DRILLS: Bucyrus Erie 29-T, gas, 9" bits, NEW. 2—Electric, 220/440 volt, used. 2—42-T diesel, 9" bits.

MOTOR: G.E. 40 H.P., 3 phase, 60 cycle, 220-440 volt, 1765 RPM, with V-belt pulleys and belts, starter, etc.

GOODRICH SUPER LONG LIFE CORD CONVEYOR BELT (NEW): Large quantity 42" wide, 6 ply, 42 oz. duck, 7/32" top cover, 1/16" bottom cover, on original reels, all NEW, NATURAL RUBBER, with or without mechanical parts.

CRUSHING PLANT: Portable, diesel powered.

GYRATORY CRUSHERS: 1—30" and 42", complete with motor and drive. 1—Allis Chalmers 9-K and 6-K. 1—Austin No. 8, 20" opening with feeder. 1—Telsmith 16-B, steel, 16" opening. 1—13-B, 13" opening.

JAW CRUSHERS: Sizes 4x6 to 48x60".

REDUCTION CRUSHERS: Symons 5½ ft. short head Cone. Symons 7 ft. Cone. Telsmith 30" Cone. Telsmith 32-B, V-belt pulley. Type R322 fine reduction. Traylor type TY, 1'8".

HARDINGE MILLS: 6'x36" silex lined; 8'x20" and 10"x72" steel lined with or without motors; 8'x20" and 8'x30" manganese steel lined, Herringbone gears, with motors and V-belt drive; 4'x10' Ball Mill, steel lined.

KILNS, COOLERS, DRYERS: 1—Single shell 34" x20', complete with drive, burner, no motor. 1—10'x90' heavy duty type Dryer complete with dust collector and all auxiliary equipment. 1—Ruggles Coles double shell, class XF-12, 80"x60'. 1—Traylor single shell 60"x10' with or without motor. 1—Christie 80"x50'.

MINE HOISTS: 1—All steel single drum 8' dia., 1⅛" rope, 64,000 lbs, single line pull, 600 FPM, 400 H.P., 2200 volts, A.C., control equipment. 1—250 H.P. single drum, 73"x5', 30,000 lbs. single line pull, 750 FPM, complete.
1—200 H.P., single drum, 42" face 60" dia., A.C., 2200 volts and controls.
1—150 H.P. double drum, 38" dia., 42" face, 440 volt, A.C., complete with controls.

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Shaker and Vibrating Screens
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CRUSHERS: 10x20 A-W, 18x32 Acme, 20x36 Pioneer w feeder, 24x36 and 60x42 Farrell, 40x 48 Buchanan, 44x60 A-C JAW, 14, 16 and 30" Sup. McCully, 848R Allis GYR. 2 and 3' Symons, 18x24 McLanahan DBL. ROLL.
5639 and 1926 Dixie. 2 XB Gruendler, No. 1, No. 5 and No. 30 Williams Hammer Mills.
SHOVELS: ⅜ yd. Bay City Gas Speeder LS40 Diesel, ¾ yd. Koehring 301 and 304 gas, 1 yd. Lorain 60 gas, 1¼ yd. Marion 450 Elec 440V, 1½ yd. Northwest 5 and 6 Gas and Diesel. 2 yd. P&H 855B, Bucyrus 50B Diesel.
¾ yd. Lorain 40A Diesel Dragline
Hough, Eagle, B-G Loaders Gas and Diesel.
10 ton 8 wheel std. ca. McMyler Loco. Crane
8-A Belt Conveyor 42" belt, 179' long.
Mundy 2-drum Elec. Cableway outfit.
315 and 500 CFM Ing. Rand Diesel Air Comp.
SCREENS: New Universal, 4x12 Seco, 4x8 Leahy, 3x8 Gyroset, 2x6 Syntron.

MID-CONTINENT EQUIPMENT CO., INC.
6677 Washington Pa 2290
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GYRATORY: 30", 36", 42" and 48" Allis-Chalmers; also Nos. 12, 10, 9, 8, 7½, 6, 5 and 4.
JAW TYPE: 24x26, 22x40, 22x50, 30x42, 40x48 42x48, 48x60 and smaller sizes to 7x9.
REDUCTION TYPE 2, 3, 4, and 5½ ft. Symons Cone; Nos. 19, 25, 37 and 38 Kennedy; 36" Traylor TZ, 1'8"x24" TY; No. 36 Telsmith Gyrasphere; 7, 10, 14" Newhouse; Stedman 30 and 36" Impact.
ROLLS: Allis-Chalmers 72x30, 54x24, 54x20, 40x 15 & 18x10. Pioneer 18x36. Universal 16x24. New Holland 24x16 & 16x16; McLanahan 30"x60", 18x 24 & 18x30 Single Roll. Also others.
HAMMERMILLS: Williams Nos. 2, 3, 4 & 6; Jay No. 40 & No. 70; Gruendler 2XD & 3XB; Dixie 2024 & 3650.
MILLS: Hardinge 3'x8", 6'x22", 6'x3', 8'x3' & 8'x4'; Kennedy 4x8, 5x6, 5x11; Marcy 4x5, 6x4; Smidth 16B Tube Mills; Raymond 4 & 5 Roller Mills; Bonnot, Fuller, Sturtevant & others.
CRUSHING PLANTS: 25x40 Cedar Rapids Portable, Diesel Power. Others portable & stationary.
BINS & BATCHERS: 70 & 150 yd., 3-compt., Etc.
TRUCKS: Euclids, FWD, Internationals, Etc.
SHOVELS: 80-D Northwest 2½ yd. combination Link Belt Speeder K-580, 3 yd., and others.
DRAGLINES: 6 Yd. Walker, 145' boom. Diesel Lorain Model 40-A Crane-Dragline, Diesel.

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Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Elevators, Excavators, Generators, Hoists, Kiln, Draglines, Drag Scrapers, Dredges, Drills, Engines, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Slacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. (I have equipment at many points in the United States and Canada. What you need may be near your plant.)

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2—REX Model 34E Dual Drum Pavers, Model Duomatic, Powered with 6 Cylinder Gasoline Engine, Rex Mechanical Man, Batchmeter, 35' distributing Boom. Serial Nos. GG-165 and GG-126.

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Each Unit Overhauled

K-55 Link Belt Electric Shovel, 2 yd. Shovel & Dragline Front. 37 Marion 1¾ yd. Steam Shovel. 5' Dia. x 8' Air Swept Tube Mill, Complete with Motors, Fans and Pipe.

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1—25 ton Plymouth Diesel Locomotive D-17000 Caterpillar 8 cyl. engine
10—Kopped dump cars, automatic couplings
1—20 ton Ohio Locomotive steam crane full revolving
All Standard Gauge

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10 complete open and closed elevators
Inclined and vertical 14" bucket elevators
Inclined and vertical 12" bucket elevators
New 16" enclosed elevators on belt or chain
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400' new No. 933 thimble chain with K2½ links
CHAINS: H78, 83-F2, 114, 522, 750, Standard roller chain.

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300'—30" belt conveyors, Timken bearings
250'—36" belt conveyors, Timken bearings
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200'—18" belt conveyors, ball bearings
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Belt tripners for 20" and 24" belt.
Single strand flight Coal conveyor, 15"x150'
Apron feeders 18" 24" and 30"
New Standard Wood Apron Conveyor, 48"x105'
Portable flat belt conveyor with 5 HP motor, 18"x24'
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Jeffrey No. 3 and 4 electric vibrating feeders
Screw conveyors.

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Seco vibrating screen, 4'x10' two deck
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Selectro vibrating screen, 3'x8' two deck
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Niagara double deck, 15"x36"
Four Hummer enclosed 3'x5' single deck
New Universal Vibrating Screens

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Jeffrey 36"x24" rigid hammer pulverizer
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Allis Chalmers 3D gyratory crusher
Farrell 1-C laboratory crusher
Sturtevant No. 2 Sample Grinder
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Kent laboratory crusher with ½ hp motor
Double Roll Crusher 18"x28", heavy duty.

MISCELLANEOUS

Gear reducers from ½ to 90 HP
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10 Koppel V shape dump cars 5 yd. standard gauge 2 way dump, all steel, 6" channels, AAR couplers Lt. Wt. 8300 lbs. ea.

200 N.T. 20 lb. ASCE relaying rail with fish plates. Excellent condition.

HYMAN-MICHAELS CO.
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2—30-ton Overhead Traveling Cranes, 52' Span. New 1941.
1—30-ton Plymouth Std. Ga. Gasoline Locomotive. New 1943.
6—500 cu. ft. I.R. and Chgo. Diesel Compressors.
1—½ yd. ½NIT Crane and Dragline Model 514.
1—¾ yd. Link Belt Model 75 Gas Shovel and Crane.
1—1½ yd. Northwest No. 6 Diesel Shovel.
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1—1½ yd. Koehring Model 604 S&C.
2—10-ton American Terry all steel Stiffleg Derricks.
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1—D7 Tractor w/cable Blade DDPCU. 4T Series.

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1—Sauerman Slackline Cableway complete 2 cy. capacity. Used Diesel Hoist $13,000.

PRICE BROTHERS COMPANY
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DEPENDABLE USED MACHINES

Special—Brand new Pioneer 10x36, SKF bearing jaw crusher, $4500

BD-7 with bulldozer	Byers 83 dragline	Lipuman port. agstone plant
Butler Carsoop	Osgood ⅜ yd. dragline	Hercules DJXC power unit
B-G 21x10 port. conveyor	Pioneer 42"x14' apron feeder	Morris 10" gravel pump
Lorain 5 ton crane	Robins 42' belt feeder	Screens, 4x8, 4x10, 3x10, etc.
Link Belt 2½ yd. dragline	Badger port. gravel plant	Int. I-4 with Hough loader

All above equipment reconditioned in our own plant.

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SHOVEL, CRANE & CLAMSHELL

1—BUCYRUS-ERIE, Model 20B, Combination Shovel, Crane and Clamshell, 35' Boom, powered with a Caterpillar D4600 Diesel Engine, Serial No. 15203. In excellent condition and ready to go to work.

1—BUCYRUS-ERIE, Model 10B, Combination Shovel, Crane and Clamshell, Powered with a Buda Gasoline Engine. Excellent condition and ready to go to work.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

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For quick sale — Bargain Prices

15—X55—Air Drills—(Ingersol Rand Mfgrs.)
6—Size 365 Rx3—Model 5128 Air Drills
10—1" Stroke Air Hammers—(Ingersol)
10—3" Stroke Air Hammers—(Ingersol)
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QUITMAN TRACTOR & IMPLEMENT CO.
Marks, Miss.

1—Pair Rolls, Allis-Chalmers 40"x 15", Anaconda, rebuilt and Rebabbitted.
1—No. 6 Traylor Gyratory Crusher with T.Z. head.
1—No. 4½ Traylor Gyr. Crusher.
1—Jeffrey Swing Hammer Mill, Type A, 30"x24".
1—18" Link-Belt Apron Conveyor—9" pitch, 27' centers, like new.
1—American 66"x35 ft. Rotary Dryer with burner, stack and drive.
Bucket Elevators, open and totally enclosed, new and used, as is or rebuilt.

JOHNSON & HOEHLER, INC.
P.O. Box 102 Lansdowne, Pa.

GYRATORY CRUSHER FOR SALE

1—No. 4 McCully, side discharge, size of each feed opening 8"x30", smallest product 1½", largest product 3½", weight about 23,000 pounds. No power. Splendid condition. Price, on cars our yard Los Angeles—$1,000.00 net.

BROWN-BEVIS EQUIPMENT CO.
4900 Santa Fe Ave., Los Angeles 11, Calif.

POSITIONS WANTED

Graduate engineer, training in silicate chemistry. Also considerable training in Electrical and Mechanical Engineering. 11 years experience in the Portland Cement and nonmetallic fields in Research, Engineering and Operation. Now superintendent of a modern non-metallic operation in the Northeastern U. S. Desires position in middle or western United States. 34 years old, married, with family. Box H-88, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

EQUIPMENT WANTED

WANTED

Rotary kilns: Size 11', 10', 9', 8', 7' and 6' dia. 100' or longer.

Compeb mills: 6' and 7' dia.

Tube mills: 5', 6' and 7' dia.

OLLIE E. LAWRENCE
P.O. BOX 688
QUINCY, MICHIGAN

WANTED

Good Used Standard Gauge
DIESEL-MECHANICAL and DIESEL-ELECTRIC LOCOMOTIVES
All capacities.
Advise condition, location and prices

Box H-89, Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

WANTED TO BUY

Used Jaw Crusher, 18"x30", or slightly larger, and apron feeder, preferably on any kind of wheels.

BICHLER BROS.
Escanaba, Michigan

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FOR SALE

Ready Mixed Concrete Sand and Gravel Plant. Priced to sell. Excellent business opportunity, no competition, located at Willows, Calif. For full details write

WRUCK BROS. & DAVIS
P.O. Box 681 Willows, Calif.

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CORE DRILLING
—anywhere!
"We look into the earth"
PENNSYLVANIA
DRILLING COMPANY
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We were lifting a $50,000 generator

and I could have saved $7.63 on clips

but I'd rather be safe than sorry!...

That's why industry uses more

CROSBY CLIPS

than all other drop-forged fasteners combined.

9912

Who'd want to save $7.63 on wire rope fasteners on a $50,000 piece of equipment, when absolute safety costs so little more? Genuine CROSBY CLIPS—drop-forged (not cast!) of tough, resilient steel, have tremendous extra strength to withstand "X-shock"—that unforeseen blow that engineering can't anticipate. Specify genuine CROSBY CLIPS . . . and enjoy real peace of mind! Sizes for 1/8" to 3" wire rope. Distributors everywhere. Made only by AMERICAN HOIST and DERRICK COMPANY, St. Paul 1, Minnesota.

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For Rebuilding All Types of Rock Crushing Equipment

Use

RESISTO-LOY

and

MANGATONE N. M.

5 BIG SAVINGS — Increased performance; increased aggregate tonnage; decreased labor cost per ton; decreased maintenance and reduced repair downtime.

MANGATONE N.M. (Nickel Manganese) properly applied to any worn manganese steel by the TWO-TONE process will give you real performance by increasing life of all crushing equipment at least three times the life of new manganese steel crushing equipment. Provide definite savings by reducing more rock to size in less time and at lower cost per ton than you have ever experienced before. Manganese steel is not damaged by the TWO-TONE process. INVESTIGATE. We can prove it by hundreds of performances.

RESISTO-LOY applied as beads to the points of greatest wear on crusher rolls, crusher plate ribs, crusher mantles and gyratory liners will reduce fines, crush more rock to set sizes, do it quicker and easier than any other wear-resisting material. 15 to 1 increased production.

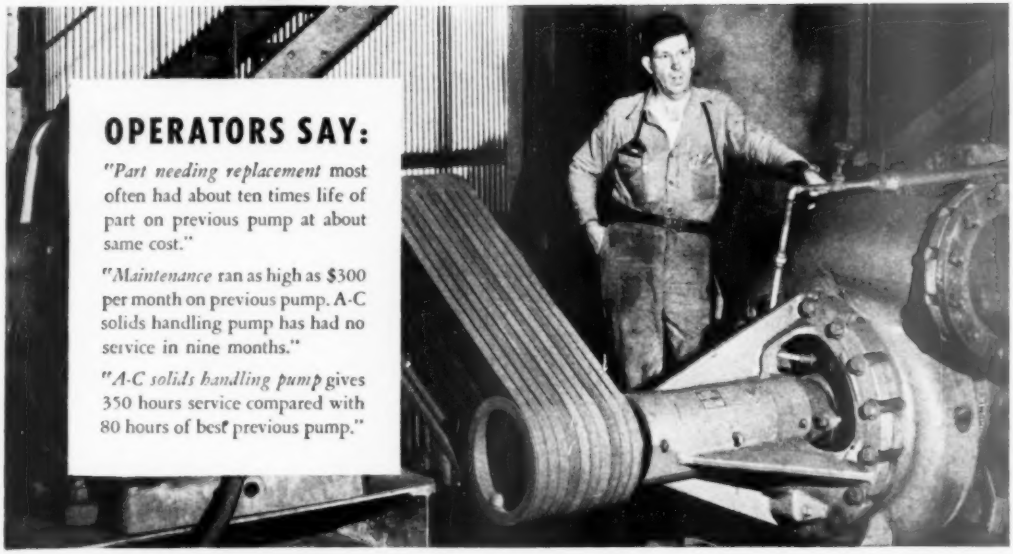
RESISTO-LOY WILL NOT CHIP OR BREAK OFF OF MANGATONE N.M. or for that matter any manganese steel REGARDLESS OF EXTREMELY HIGH IMPACT. Let us prove it to you.

RESISTO-LOY COMPANY

GRAND RAPIDS 7, MICHIGAN

SOLIDS PUMP EXPERIENCE PROVES

Long Parts Life!



OPERATORS SAY:

"Part needing replacement most often had about ten times life of part on previous pump at about same cost."

"Maintenance ran as high as $300 per month on previous pump. A-C solids handling pump has had no service in nine months."

"A-C solids handling pump gives 350 hours service compared with 80 hours of best previous pump."

REPLACE WORN PARTS IN HALF HOUR

YOU CAN GET the two things that metallic and non-metallic material processors want most in solids-handling pumps. Allis-Chalmers solids-handling pumps give you longer life between servicings and they make it easy and economical to replace parts.

Allis-Chalmers solids-handling pumps are designed with extra strong parts, built of *Allisite*, a special abrasion-resistant alloy, and application-engineered by experts with many years of experience in solids-handling pump problems.

SAVES ON REPAIR TIME

When parts must be replaced, as they must in all types of solids handling pumps, the Allis-Chalmers solids handling pump will save you hours of labor, cut down-time to a minimum and lower repair costs.

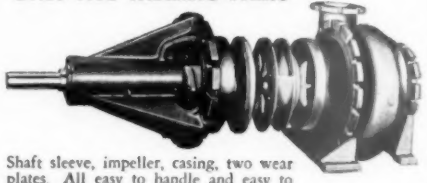
This pump can be dismantled and reassembled in a half hour without disturbing piping. Parts with varying rates of wear are separated. Only those actually worn are replaced. Three sets of bearings, brackets and shafts cover all pump sizes, reducing parts inventory as much as 2/3.

GET THE FACTS

Discuss your solids-handling equipment problems with an Allis-Chalmers pump engineer. He can show you dollars and cents savings you can make. Contact your A-C Sales Office today. Or write for Bulletin 6381.

A-2762

ONLY FIVE WEARING PARTS



Shaft sleeve, impeller, casing, two wear plates. All easy to handle and easy to replace. Pump can be dismantled or assembled in a half hour without disturbing piping.

ALLIS-CHALMERS, 975A SO. 70 ST.
MILWAUKEE, WIS.

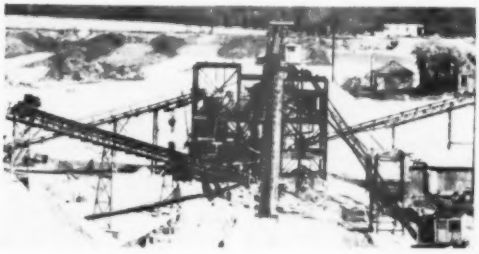
Allisite is an Allis-Chalmers trademark.

ALLIS-CHALMERS

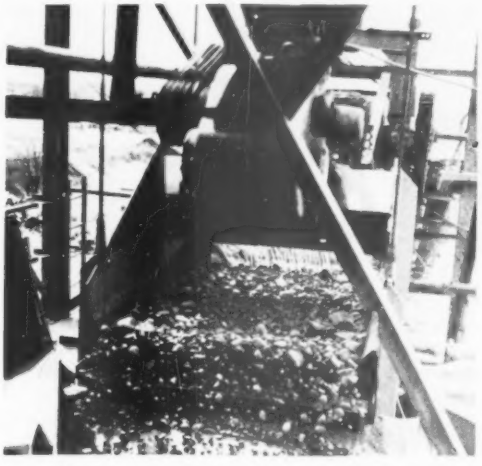
In bank run aggregate . . .

Dual Impact Action does it again!

". . . production capacity is approximately twice that of the two crushers replaced . . . even though it is operating on ten less horsepower." That's what Robert Coe of Basic Construction Materials, Chillicothe, Ohio says about New Holland's Model 2020 Double Impeller Breaker . . .



1. "We are using the breaker to crush bank run aggregate, consisting of sand and gravel, blue and red granite and some common niggerheads."

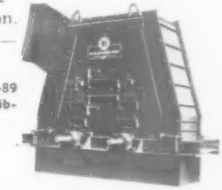


2. "Sand is screened off before it reaches the breaker but all other material passing a 12" opening is fed into the crusher."

3. "We are producing Ohio Specification, size Nos. 9, 6, 46, 4 and 3, in only one pass through the breaker. Production ranges from 100 to 165 tons per hour using no more than 40 H. P. per impeller."

NEW HOLLAND Model 2020 Breaker . . . "combines the operation of primary and secondary crushing . . . increases our percentage of crushed which is desirable in Ohio. It acts as a soft-stone eliminator . . . and produces a cubical product that stands up well under abrasion tests."

New Holland Double Impeller Breakers come in 4 sizes—1212, 2020, 3030, 5050; are easily adapted to open or closed circuit. Model 2020 operated by Basic for a year and a half, takes all sizes passing 20" opening. Yields clean, cubical aggregate minus 1" in one pass. All steel construction. Minimum horsepower required—maximum output assured.



SEE FOR YOURSELF. Write Department R-89 for complete information—name of distributor, location of nearest installation.

NEW HOLLAND DOUBLE IMPELLER BREAKERS

NEW HOLLAND MANUFACTURING COMPANY, MOUNTVILLE, PA.

Affiliate of The Sperry Corp.

LOWER PRODUCTION COSTS

That's the record of a PENNSYLVANIA Penn-Lehigh SINGLE ROLL CRUSHER installed in 1928—6,840,000 tons of Gypsum crushed; original roll shell still in use.

This record is not unusual and it illustrates pretty well what you can expect from Pennsylvania equipment. It also shows how you can get your production costs down, something that's important to know during this era of high costs.

Pennsylvania's *one-piece*, alloy steel roll shells are the heart of this economy story. No cumbersome, bolted segments with their frozen bolts and high discard losses through scrapping of partly-worn castings. No renewable teeth to work loose as worn tooth-wedges back out under heavy service. Pennsylvania roll shells stay *in* the Crusher where worn teeth are built up by welding—a quick, simple, *single* operation that slashes labor and parts costs; also, out-of-service time.

With power demands as low as ⅓ HP per ton, wherever they are in use "Steelbuilt" Pennsylvania Single Rolls have made a name for themselves for economical reductions of Cement Rock, Limestone, Gypsum, Barytes, and friable Ores.

PENNSYLVANIA CRUSHER COMPANY

DIVISION OF BATH IRON WORKS CORPORATION

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